

Bob Cooper's

JANUARY 23 2006

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific and Asia

IN THIS ISSUE

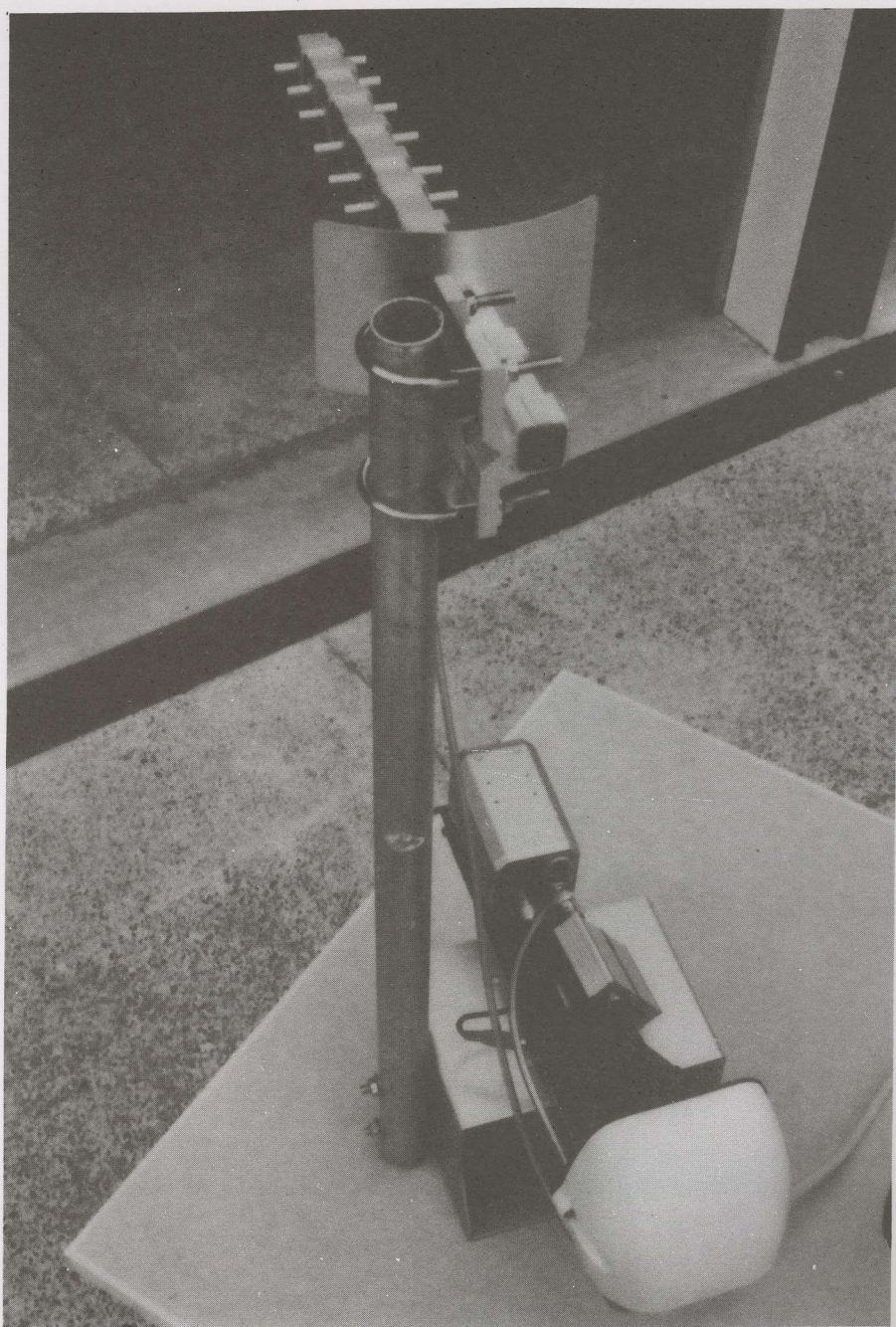
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30km distances

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Videophone
Calls!**

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to attend with us

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News
- ✓ Latest Hardware News
 - ✓ AMC23 is up
 - ✓ Observer Reports

Vol. 12 ♦ No. 137
Price Per Copy:
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Hualin Pty Ltd

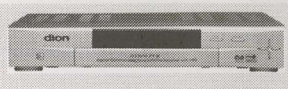
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For all prices, product information and banking details please visit the website or phone us.

Specials this month

DT800PVR - Digital Receiver



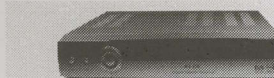
- 40Gb HDD = 40hr Record time
- 2x CI CAM Slots
- DiSEqC 1.2
- **Fibre Optic Output Capability**
- Price: \$390 AUD + GST

Satlook - Signal Meter



- Digital, Analogue and combined versions available
- A must for the professional
- Simple menus and functions
- Price: Phone up for Quote

DreamMAX - DT470



- Irdeto embedded
- 4900 Channel Memory
- DiSEqC 1.2
- User Friendly
- Price: \$200 AUD + GST

Everything? Yeah we got

LNBf

- Zinwell C Band
- Zinwell KU Band
- MTI C Band, Superhigh gain
- One Cable Solution - CBand
- Dual Output KU 11300 MHz

Positioners

- Superjack EZ-2000
- Superjack DP-6600, DiSEqC 1.0/1.2
- Technosat DP-200, DiSEqC 1.2
- Manual Actuator Driver - EW101
- SAP 2000: 99 Memory positioner

Actuators

- Superjack HARL-3618, 18" Actuator
- Superjack HARL-3624, 24" Actuator
- Superjack DG-120, H/H Mount

Receivers

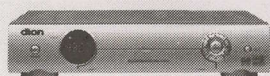
- SuperNET CA, Irdeto Embedded
- Success, Free-to-Air
- Dion DT-370, Free-to-Air Receiver
- Dion 2x CI, Hardware AllCAMed
- ChangHong, Mediaguard embedded
- SuperNET Terrestrial, DVB-T
- Phoenix High Definition STB

Dish and mounts

- 1.2, 1.8m Solid Prime focus
- 45, 60, 65, 85cm KU dish Offset
- 2.13m, 2.27m, 2.4m, 3.0m, 3.07m, 3.7m, Mesh Dish, Light and Heavy
- Duty PSI and JOYSAT Available

- CBand Wall brackets
- CBand Concrete mounts and stands
- KU Gutter mounts
- KU Wall mounts
- KU Float mounts
- KU Tinroof mount

Dion 818 CI - Digital Satellite Receiver



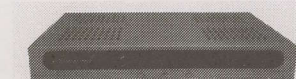
- Slim Size and User Friendly OSD
- 2x CI (Common Interface) slots
- Hardware AllCAMed

SuperJack H-H Actuator, DiSEqC embedded



- All it takes is one coaxial cable....
- NO MOTOR CABLE REQUIRED
- DiSEqC Positioner EMBEDDED!

Supernet - Terrestrial DVB-T



- Digital Terrestrial Receiver
- Slim Design
- High Quality Picture
- Easy to install and use

Dion316 - Digital Satellite Receiver



- FTA + Software Patched
- 4000 Channel Memory
- DiSEqC 1.0/1.2 Compatible
- Price: \$170AUD + GST

Switches and Splitters

- 2 and 4 way DiSEqC switches
- 0/22kHz switches
- 2 and 4 way cable splitters
- V/H Multiswitch
- 0/12V Switch

Cable - 15m, 25m, 305m packs

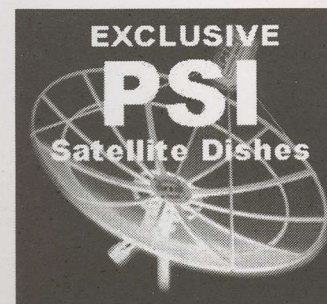
- RG6-U Dual Shield Coaxial Cable
- RG6-U Quad Shield Coaxial Cable
- Cat5 Actuator Cable

Plugs

- F Connectors, Screw or Clamp types
- Cable joiners
- AV Splitters
- Cable Strippers
- Cable clampers
- Various other joiners and accessories
- e.g. RCA/SCART cables and converters

Misc

- 2.4GHz AV Sender
- Irdeto 2.06B CAMs, Viaccess CAMs
- Satlook Digital Signal Meter
- Satlook Analogue Signal Meter
- Satlook Digital + Analogue combo
- Satellite finders
- Angle level measure instrument
- High Quality Compasses



SatFACTS MONTHLY

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is published 12 times each year (on or about the 15th of each month) by Far North Cablevision, Ltd.

This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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our Twelfth year!

COOP'S COMMENT

A charmed life. Some would say my parents had tremendous foresight to schedule my birth at approximately the same time RCA was first demonstrating home television at the New York World's Fair of 1938. In the 12 years that followed, World War Two, which certainly delayed the introduction of commercial television in America, allowed me to reach an age where I could grasp the importance of this then-new technology and totally immerse my young mind in all that it offered. Without WW2 intervening, I would have been 'too late' to participate in the first television revolution. There are few reasons to be 'grateful' for WW2, this would be one of those few.

As I type these words a small box about the size of a portable in-built-screen DVD player is resting atop my Packard Bell PC and on its 100mm/4" screen and as I glance up, there I am, glancing up because I cannot type without staring down at the keyboard. That's me, in glorious 256 bit colour, my grey hair prominent on the screen. Moments ago I was a small postage stamp insert in the upper left corner of the same screen and filling the balance, my pal Kenny Schaffer in New York (the city). Kenny and I are testing and 'talking' (we need a new word here as we were talking and seeing each other full time; how about 'Viewtalking'?) a brand new system created for Australia's Global Touch Solutions firm headquartered in Melbourne.

Videophones are not new - this one is, in dozens of ways. First of all, it allows me to viewtalk with Kenny for as long as I wish, anytime of day (or night - he being 6 hours offset from me), FREE. Read that word again. FREE. No line charges, no connection charges. Totally FREE. It is a bit like finding a Foxtel receiving system new in a box with card inserted and a lifetime prepaid subscription. Just hook it up, and there was Kenny smiling at me from 8,000 miles away. The quality? VHS pure and simple, in the SP mode. No pixelations, no jerky motions, no dropped frames.

We touch, very briefly, on this creation starting page 19 here this month and in our February issue, we will tear into it in our usual detail.

Now about going to the Satellite Expo 2006 in Atlanta, Georgia in mid-April coming. When I attended the late June 2005 show in Memphis (Tennessee) I came back impressed enough (see July 2005 SatFACTS; #131) to boldly suggest that we form a group - call it a 'Pacific Satellite Expeditionary Force' if you like - to attend the 2006 show. Which is April 18th-20th in the hometown of CNN and the many other Ted Turner created enterprises. I also suggested that I or SatFACTS could act as a co-ordinator to allow us to appear as a group, staying at the same lodging facility, sharing where practical the same airline flights, and co-ordinating our attendance in a way that the yanks would not forget, soon, that they had been invaded. OK - the time has come for those 15 or so who contacted us back in the July - December period with a stated interest in being a part of such a group to do something positive. Immediately upon finishing this page, turn to page 32 and complete the top and bottom sections, and fire it off to us using the addressing information supplied. *There is no tomorrow on this one* - anyone who contacts us after February 15th will simply not leave time for us to arrange the Atlanta details. That is Wednesday February 15th, this year! This notice will not appear again. Put this off and you'll be staying home.

One of the objectives I have in Atlanta is to bring out, there for the first time, hard bound copies of my new 'VIDEO PIRATES' chronology of how TV piracy has run rampant from the 50s onward. In the DMS International booth, copies will be available for sale along with whatever limited value as might attach to having the author (me) sign individual copies. There are a number of surprises coming here - including the most pointed of all - the hard bound printed version previously released on CD will not be called 'VIDEO PIRATES'. The hard copy title is a closely held secret and will stay that way until the first cartons of newly minted books are opened in Atlanta.

Will you be there with us? Time is awasting!

In Volume 12 ♦ Number 137

SatFACTS Designed low-cost license free video links -p. 7
FREE videophone connections are coming -p. 19

Departments

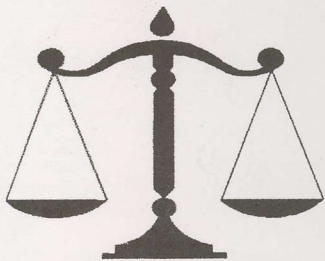
Programmer/Programming -p.2; Hardware/Equipment Update -p. 4; SatFACTS Digital Watch -p. 23;
Supplemental Data -p. 26; With The Observers -p. 27

-On the cover-

A 2.4 GHz/S-band yagi antenna, a short length of coaxial cable connecting to a weatherproof housing protected CCD colour camera and a 50/200/600/1000 milliwatt S-band transmitter co-powered by a 12 volt DC power supply. And you have a totally remote security camera package with dozens of applications. The best part? The receiver can be up to 30km away. More? Starts page 7, here.



January 23, 2006

PROGRAMMER
PROGRAMMING
PROMOTION

UPDATE

JANUARY 23, 2006

iPSTAR is here

"I have seen the performance and iPSTAR is definitely going to have an impact on the New Zealand marketplace. Two service providers, Iconz and Baycity, lead the pack in offering to install the Ku-band two-way links required. Although they claim to be primarily interested in rural or rural-commercial accounts (such as dairies and farms), the truth is that anyone who wants improved high speed Internet access will find the costs to be less important than the service possible. If we could only get a service provider to bring the user costs (download and upload) down to allow very large file transfers, their future would be secure."

CS, Auckland

In fact, how about transferring massive files including live real time television (+ sound) free! See page 19, this issue.

Nagravision breach?

"I saw a report on Deutsche Welle during December stating that Nagravision has been broken as an encryption protection routine. Is this the same system used by Fiji's C-band service?"

Peter, NZ

Nagravision version 1 has been 'broken' for years, version 2 is widely used by some very large program-packagers including the DISH TV network in USA, and, yes, Fiji. Not surprising the 'news' comes from Germany which remains the epicentre of all piracy activity world-wide.

Fiji Sky Pacific in Tahiti

"Using a 14.5 foot Paraclipse dish, I have Sky Pacific reception here; will be trialling on a ten foot and will advise. It works very well!"

SW, Tahiti

Sky Pacific has recently established a representative in Tonga but other Pacific locations remain 'grey market' which means if you want to be a subscriber, you will need a Fiji address where they 'think' you are located even if your STB and smartcard are hundreds or thousands of miles from that point.

Gotcha. Reggie Scullion, resident of Quebec (Canada) is giving up more than \$4 million (US) in cash and property in settlement of a piracy TV suit brought against him by Murdoch's DirecTV. Scullion admitted providing "modified smart cards" and other piracy hardware as well as assuming a rather high profile "advocacy posture" in his dealings with consumers. DirecTV is not legally available in Canada, being licensed only for USA operation although the firm admits there might be as many as a million 'subscribers' watching their service throughout bordering countries (Mexico, Caribbean, Bermuda and Canada).

iPSTAR contacts: Bob Hob Hinrichs (61-2-8875-4300) or in Thailand Ms Janaskorn Pongchabubnapa +662-591-0736, extensions 8495 or 5084.

Technical information listing 21 points of interest for each of more than 800 satellites available on-line:

http://www.ucssusa.org/assets/documents/global_security/UCSSatelliteDatabase_11-15-05.xls

with no space between "security/" and "UCSS..."

Tahiti-based TNS has upgraded from Viaccess 1 to Viaccess 2 CA format (January 1); they estimated 300 cards (!) were affected (well, the known ones anyhow). Competitor Canal + has been using Viaccess 2 for some time. The I701 service is on 11.136, Sr 23.159 with 8 TV programming channels.

Fiji's Sky Pacific late in December upgraded from 12 to 16 TV channels after forging a new agreement with India's STAR. One of the new channels is in Mandarin-Chinese. Fiji-One remains FTA (channel 1) but a smartcard is required in the receiver for it to function.

P2P means peer to peer which is essentially the most popular Internet format between two different users. If one of the individuals has gained access to protected (read "copyright") material, such as music or text, and passes this on to another party, there are potential legal problems. As in, if it is copyrighted, "copying rights" from one to another are restricted or prohibited. With the exception of personal mail, virtually everything one accesses is in fact copyright by somebody someplace. The US has led the way to make it a serious crime to "share" material using P2P formats and a number of clever if not memorable software programs have been created to "get around" the restrictions. Now comes France which late in December adopted new legislation (by a Parliament 30 to 28 vote) that would permit free downloads of copyright content from the Internet for private use. The new legislation, yet to go into effect, is based upon a tenant of French Law called "private copy". So how would French copyright holders be compensated? One scheme under study would create a royalty tax collected from/through ISP (Internet Service Providers). In Canada, a court has ruled it is legal to download but not to upload content using peer-to-peer services (think about that!).

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From the top line EP 3000 EVO to the economical handheld S22, C30 and T40, Unaohm's claim to fame is sound measurement principles. Now supported in the Pacific by Laceys.tv's Factory Trained Repair and Cal centre, there are good reasons to make your next meter an Unaohm!

Not so happy year for C-band?

"Regarding the extensive report by Tim Alderman and others that C-band (analog as they spell it there) is about to expire (SF#136). Indeed the numbers verify that happening, perhaps this year. According to current information from the Access Control Center, the Motorola owned subsidiary responsible for tracking 'big ugly dish' traffic, de-authorisations for C-band in December totalled 37,874 while the new accounts were a meaningless 47. The current number of still authorised C-band systems was 144,587 as of the start of 2006."

Glenzo

Tim Alderman, who lamented the loss of programming of specific interest to his home in our December report, will find nothing consoling about these numbers. Let's see - if they continue to lose 37,874 a month from January 1st onward and there are 144,587 holdouts - we extrapolate all of them will be gone by around April 20th. Tim may return from his appearance in Tasmania (March 2-4) to find nothing left for his beloved C-band analogue!

Free to air - maybe

"The ABC A-P web site (<http://abcasiapacific.com/tuning/smartcard.htm>) has announced that Rugby Union coverage will be available on their PAS-8/ (PAS-2) transponder(s) starting in February. There is a hitch. It will be encrypted (no mention of what format) and you must request a card (free) from them to be able to view the Rugby coverage. They say, 'We will be showing all the international competitions featuring Australia, New Zealand and South Africa including the Super 14s, The Bledisloe Cup and Tri-Nations games.' They also say, 'If you are watching us via your own satellite equipment you will need to obtain one of our free Smart Cards to watch'. Of course there is a 'hitch' to this: Australia and New Zealand addresses will not have a card issued. Obviously you need a friend someplace in the Pacific or Asia to obtain your card. The same coverage, as I understand it, will also be available on Fiji TV's Sky Pacific for the usual subscription fee."

Craig Sutton, New Zealand

Not to speak of the need for a receiver that accepts the 'free card' - possibly Viaccess (Australian format) V1???

HARDWARE EQUIPMENT PARTS

UPDATE

JANUARY 23, 2006

AMC23, the new American owned satellite scheduled to function from 172E (between 1701 at 180E/W and PAS-2 at 169E) has been testing as we go to press from (of all places) 170W. Strong carriers have been reported on 3900, 3940, 4008Hz + 3717, 3768 and 3884V but nothing on Ku band yet. The satellite was delayed in launch from early to late December but as you read these words could in fact be already at 172E. There are some interesting challenges here - dishes smaller than 3m may (depends upon your look angle) find it difficult to get 'away from' PAS-2 at 169E on C-band. On Ku, the 3 degree spacing to PAS-2 is even more of a challenge if AMC23 fires up on transponders already in use by PAS-2. Certainly small dishes (under 1m in size) will find 'adjacent satellite crud' marring their reception. Overall however it looks like a good satellite with much promise, likely to become a major source for FTA and pay-TV programming over the first 24 months.

Possibly not going far. SelecTV is a new Australian firm (new in mid-2005) trying to bring through PAS-8 a programming package to compete with the Boulos Optus B1 foreign (non-English language) packages. SelecTV was trying to arrange A\$10 million in "interim financing" late November - early December, to get themselves into a position to be a business enterprise. They will of course require far more than that to go from zero subscribers and no field force to a viable business. Boulos may well be everyone's dartboard but in fact he is there, does have a head start and, as goofy as his management seems to be, will be a strong competitor. SelecTV is taking over the former Boulos transponder space on PAS-8, and their own "hook" is to mix English language programming (11 channels including CNN, Cartoon Net, Turner Classic Movies, NGeo, BBC World, Fashion TV and The Wine Channel and four Movie Channels from Australia's pay package 'The Movie Network') with foreign origin channels. A previous release mentioned their strategy, along these lines: "We intend to package English programming for the second generation immigrant homes in addition to specific home country channels broadcasting in their native language". The English package of 11 has a monthly cost of A\$29.95 while the non-English package is A\$19.95 (total \$44.95). As an installer you *might* get some work from these folks, while they are still around.

Amusing if not sad. Dick Smith Electronics(<http://www.dse.co.nz/cgi-bin/dse.filereader?>) offers advice to those who might wish to install their own satellite dish (not that DSE stocks what you need to do this). One line reads, "*The LNB reduces the signal frequency to approximately 2.3 GHz that is sent down the cable to the satellite receiver*". 2.3 GHz? Now that would be a most unusual LNB(f) not to speak of the need to have an S-band receiver to do something with the downconverted signals. Whomever wrote this obviously does not read SF.

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Extra Heavy Duty Mesh** \$180 each
Buy 10 get one Free!



**Folding Arm Dish
best dish for caravan & camping**
64cm \$25/each
78cm \$48/each
88cm \$55/each
North Elev Bracket \$5 each

Irdeto 2.06B CAM	\$110	PBI C+Ku band LNBF	\$65
Viaccess CAM	\$110	Zinwell C band LNBF	\$35
65cm Azure shine offset dish	\$28	Zinwell Ku band LNBF	\$25
75cm Azure shine offset dish	\$40	MTI C band LNBF	\$25
85cm Azure shine offset dish	\$45	MTI one cable solution LNBF	\$45
One leg gutter mount	\$18	Satellite finder	\$25
Two leg gutter mount	\$22	RG6 striper	\$20
Tin roof mount	\$22	RG6/RG11 crimper	\$30
Wall mount	\$15	Angle meter	\$35
Superjack H-H motor	\$95	Compass High Quality	\$10
2.3m SD mesh dish	\$150	RG 6 Crimp Connector 100 pack	\$25
3m SD mesh dish	\$340	22K switch	\$10
3m HD mesh dish	\$380	Two way DiSEqC switch	\$10
3" 2.5m galvanised pole	\$30	Four way DiSEqC switch	\$12
3" 3m galvanised pole	\$35	Satellite 2 way splitter	\$1.50
3" 3.5m galvanised pole	\$40	Satellite 3 way splitter	\$2
3" Triangle Pole for C band dish	\$50	Satellite 4 way splitter	\$2.50
Speaker Stand for caravan use Ku dish	\$45	4 way multi-switch	\$35

Best performance



Made U.S.A

Paralipses 1.2m prime focus panel dish

\$160/each
AZ/EL mount \$32/each



Easy transport

Last stocks of mesh dishes from USA

Paralipses 2.6m mesh dish

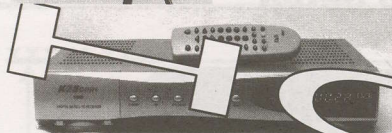
\$1500/
(300/each x5)

Multi-beam 1m offset dish

Ku band satellite from Optus B3 + Optus C1 + Pas 8 + Pas 2
Just one dish to receive all

\$150/each

Up to four LNBF 30 deg wide

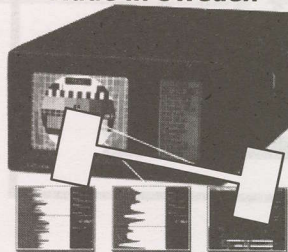


**Koscom 1600A
Irdeto Embedded Satellite Receiver**
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Buy 10 or more and get 10% discount & one box of 305m RG6 cable for free

SATLOOK Digital NIT \$1395

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- KU- and C-band (Theater/converted video).
- 99 memory-positions for spectrum pictures.
- Satellite identification.
- Symbol rate 1-30 Msymb/s.
- RS 232 for PC connection.
- Built in, rechargeable battery.
- Only 5 kg complete with carrying-case.
- Transponder content analysis.

Made in Sweden



SATLOOK

COMBO \$2295

- The combination of SATLOOK Digital NIT and TVLOOK
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- 4.5" B/W Monitor for PAL/NTSC/SECAM
- Lots of memory positions for spectrum pictures
- RS232 for PC-connection
- Built in, rechargeable battery. Only 7kg complete with carrying case
- TV-PART:
- 2-900 MHz spectrum analyzer
- Presents full range spectrum (and expanded)
- Very high accuracy, ±1dB (at 20°C)
- SAT-PART:
- 920-2150MHz spectrum analyzer. Digital BER, QPSK and S/N-ratio
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- LNB voltage 13/18V, 22kHz tone switch

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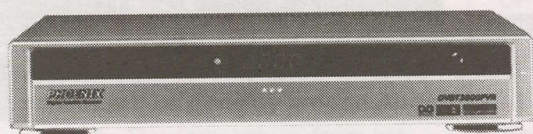
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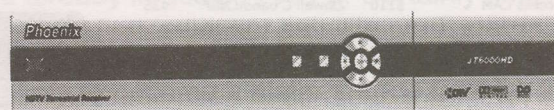
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TERRESTRIAL H.D.T.V. HIGH DEFINITION RECIEVER

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CVBS/S-Video outputs
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Easy to use

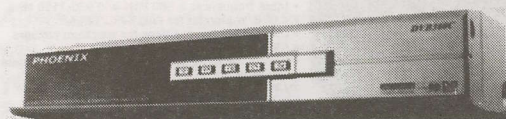


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Also available in Free to Air model

Made in Korea



IRDETO DVB-S SATELLITE RECIEVER

Fully DVB-S, MPEG2 compliant
Licensed IrdeTO CA card slot
Disecq 1 & 1.2 compatible
S/PDIF Digital audio
SVHS output
Sensitive Tuner
Also available in Free to Air model

Easy to Setup



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Step-by-Step: 2.4 GHz Low Cost Video Links

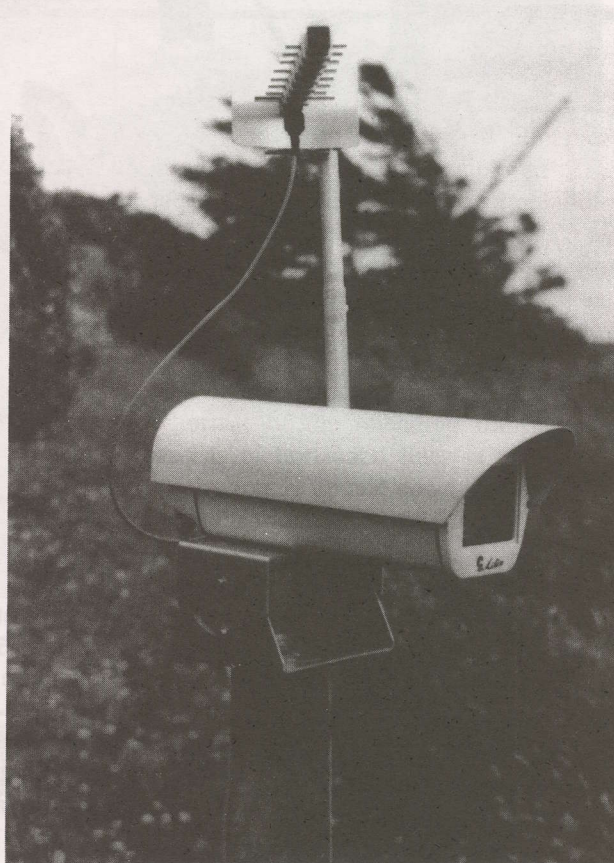
Not every reader will have an application for what follows but most will benefit from knowing that with the appropriate technology applied, video links (with companion audio) up to 30km in length, in the license-free 2.4 GHz (S) band, are now a reality.

Past issues of SatFACTS have explored use of the 1.2 GHz band for similar purposes - originating TV material at one location, using the 'ether' (airwaves) to send that reception onward to some remote site. The problem with the 'SDS' format system was primarily related to frequency; 1.2 GHz is not a license-free band and while it could be put into use in remote areas, or on islands with sub-developed UHF/microwave occupancy, it was seldom a 'plug and play' system. The 2.4 GHz license-free band (actually 2,400 to 2483.5 MHz) has no such problems. Virtually any consumer electronics store has a variety of 2.4 GHz 'no license' plug and play creations for sale; 'Video Senders', portable telephones, WiFi (wireless computer systems), microwave ovens are examples.

In virtually all geographic regions, this 83.5 MHz bandwidth has been left in a 'plug and play' state. Different jurisdictions (countries) have adopted differing rules in support of this concept; New Zealand, for example, allows any system operating within this band to function without a license as long as the maximum radiated (antenna transmitted) power does not exceed 4 watts eirp. Most countries, including Australia, cap the radiated power at lower levels than this.

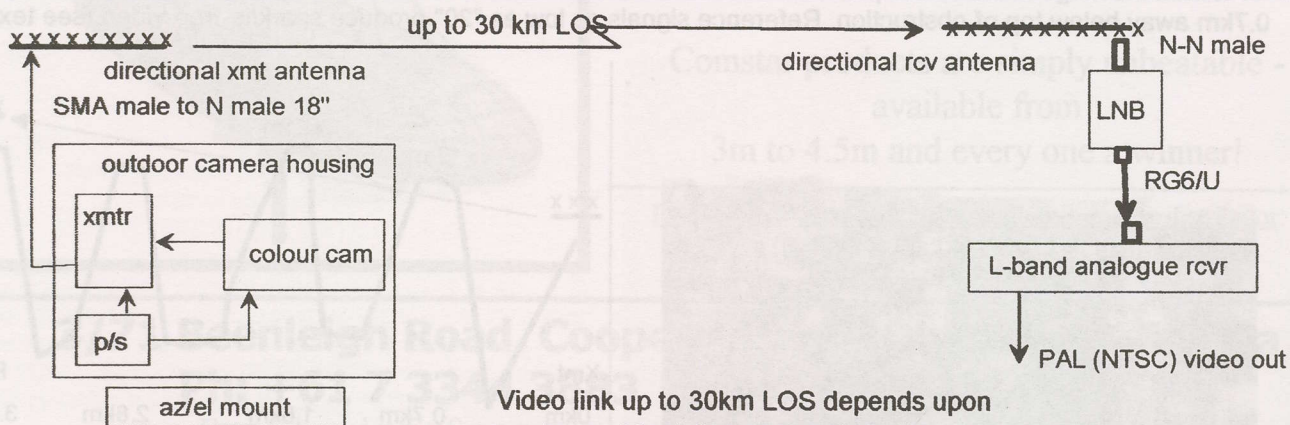
Radiated power

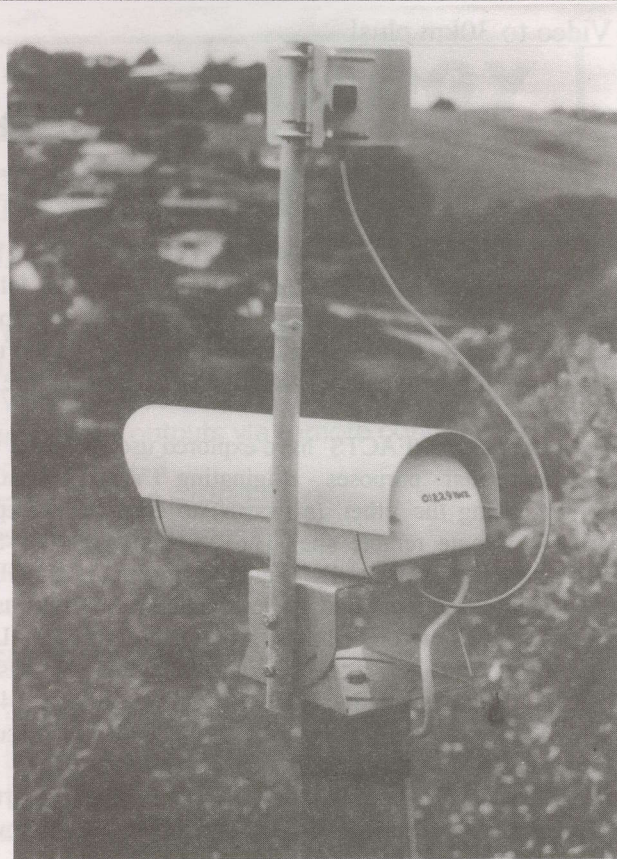
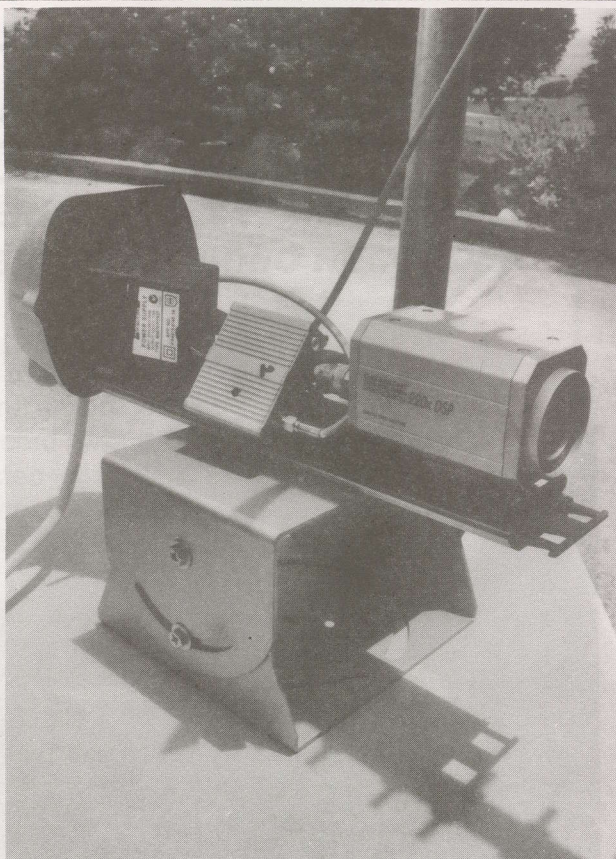
This is a calculated measurement that begins with the power of the transmitter (reference, in NZ, 'one watt'). One watt is 0 dBw (literally, 'decibels greater than one watt') while two watts would be 3 dBw (double the power, add 3 dB to the equation). The next number is the gain of the antenna, in dB (decibels) reference (in NZ) something called an 'isotropic source'. This is a tad confusing because an 'isotropic source' is not a real antenna - it is a mathematically derived imaginary antenna which has the unusual property (on paper)



Remote camera location housed in weather proof case also has S-band transmitter, shared 240V/12V powering.

of radiating equally in all directions, sometimes called a 'point source'. Fortunately, we can deal with this isotropic business by simply converting from this unreal number to a real number - the gain of a dipole. A dipole is for our purposes capable of 0 dB of gain but in the transfer from isotropic to dipole, we gain 2.14 dB. Therefore, a real world antenna that claims 7 dB of gain (reference a dipole - called dBd where the last 'd' stands for dipole) would have $7 + 2.14$





Inside (left) and outside. Housing attaches to relatively low-cost "az-el" mount (adjustable for look angle and elevation position) which also provides anchor for .5m tubing/pipe for antenna mounting. Transmitter's SMA type female output connects to transmit antenna's type N female connector with 0.5m/19" jumper cable (see text).

dB of gain reference the isotropic source. This is an important adjustment in jurisdictions where (such as NZ) the total permitted power is measured as eirp - erp in most languages means the 'effective radiated power' whereas eirp (note the addition of the *i*) means the 'effective radiated power reference an isotropic source'.

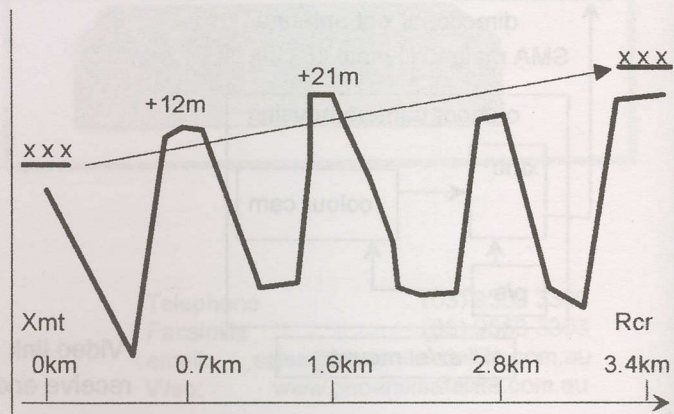
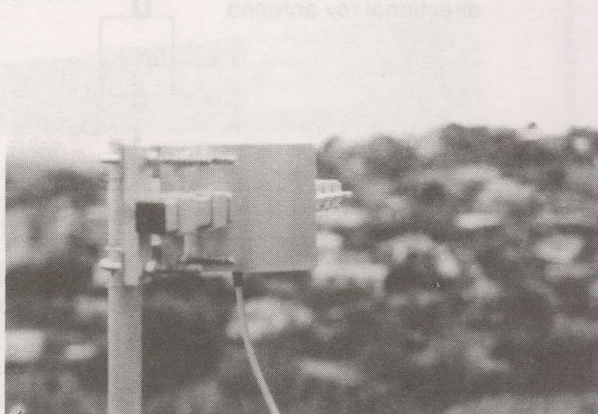
The next equation element is the transmission line loss between the transmitter output and the radiating antenna input. Ideally, there would be no measurable loss here but in the real world even an 19" length of microwave rated cable (see photo, page 14) will exhibit some loss; 1 dB is not uncommon.

By starting with the transmitter power (call it 0.5 watt or -3 dBw because it is half or 3 dB less than the standard 1 watt reference level), adding a 9.14 dB gain transmitting antenna, and subtracting 1 dB for transmission line loss we have:

$$-3 \text{ dB} + 9.14 \text{ dB} - 1 \text{ dB} = 5.14 \text{ dB eirp}$$

This is obviously 1.14 dB greater than the (NZ) authorised unlicensed limit. Reducing the transmitter power to 390 mW (-1.14 dB), reducing the antenna 'gain' by 1.14 dB, increasing the feedline loss by 1.14 dB gets us in at the NZ 4 watts eirp regulatory limit. In most regions, the 'RI' (radio inspector) will be tolerant of modest over powering (variously defined as "up to 2.5 dB greater than the permitted power", meaning

Typical non-LOS path. A LOS path of similar length produces "92" reference signal level; intrusion of two layers of terrain blockage reduces this path to "59" reference level. Note antenna is pointing into first (+12m) ridge, 0.7km away below top of obstruction. Reference signals as low as "20" produce sparklie-free video (see text).

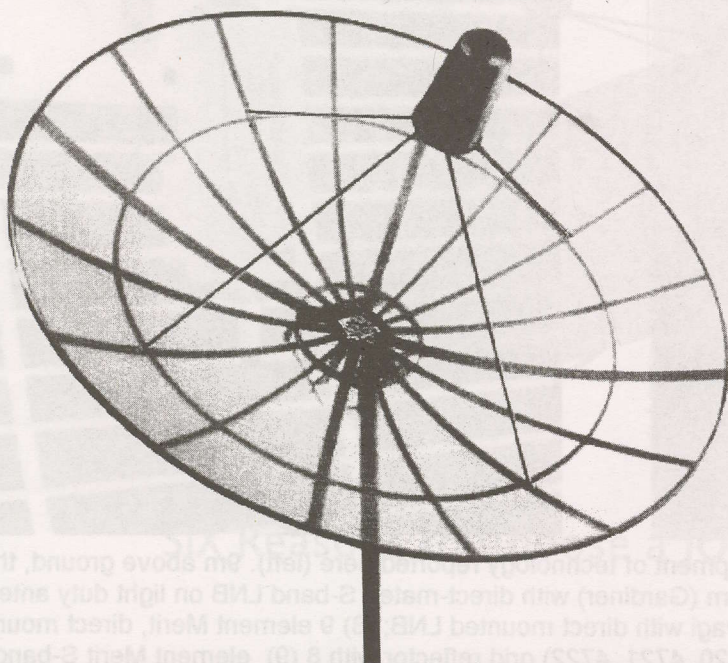




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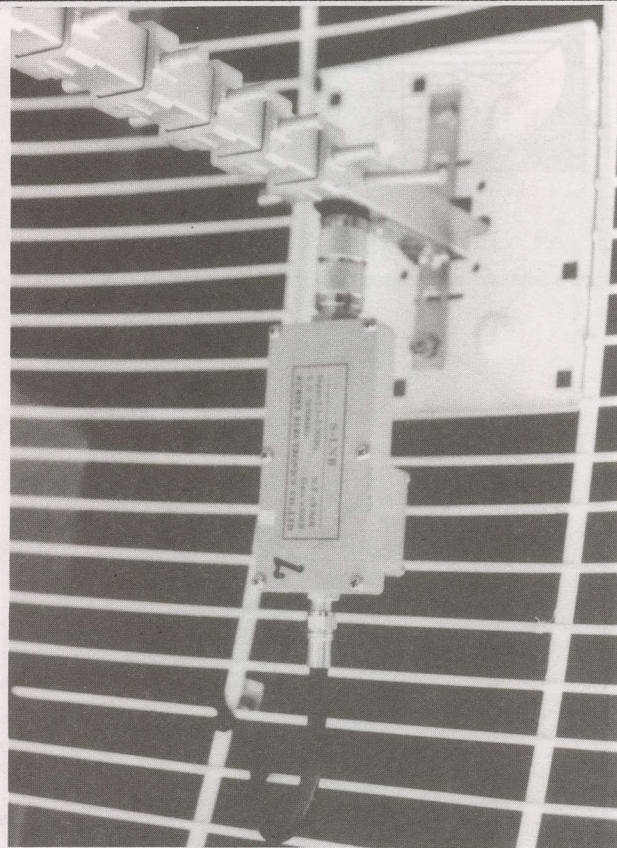
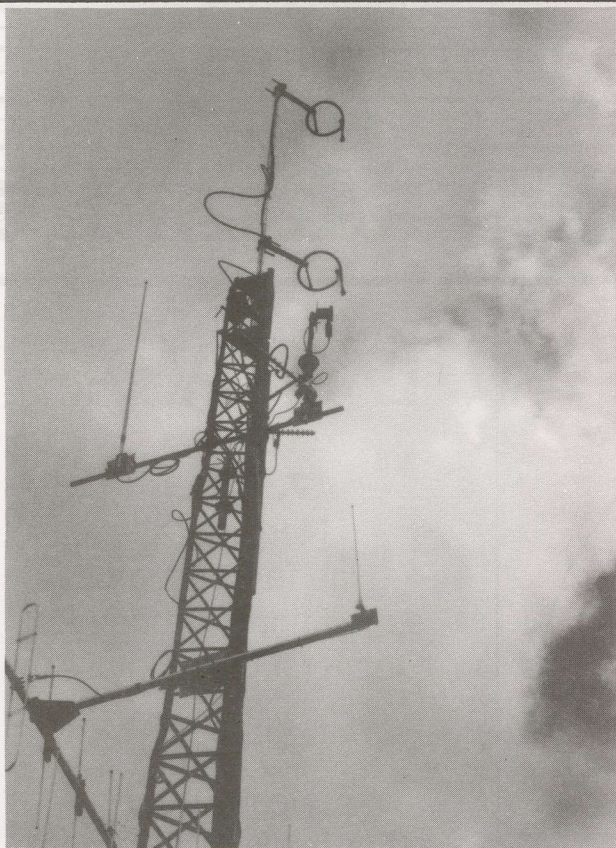
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SatFACTS test receiving system for development of technology reported here (left). 9m above ground, three separate S-band arrays: (1) S-band feed horn (Gardiner) with direct-mated S-band LNB on light duty antenna rotor; (2) 13 element Merit (brand) S-band yagi with direct mounted LNB; (3) 9 element Merit, direct mounted LNB. On right, common available (DSE #L4720, 4721, 4722) grid reflector with 8 (9) element Merit S-band yagi attached; direct-mated S-band LNB using double-male type N transition fitting.

only an intolerant RI would find a problem at levels between 4 and 7 watts eirp).

Circuit loss

In any radio wave transmission system there are 'positive dBs' and 'negative dBs'. Positive comes from the transmitter (in our examples, using 1 watt as a reference point of 0 dBw), from the voltage/signal gain of the transmitting antenna. But that is only at one end of the circuit - the originating end. There are also positive dBs in the 'circuit' at the receiving end; the gain of the antenna, for example, and the gain of the receiver.

Negative dBs are found in the transmission line losses (at both the transmitter and receiver circuit ends), the 'space' between the transmitting antenna and the receiving antenna (appropriately termed 'free space loss'), and the calculated 'threshold/sensitivity' level in the actual receiver.

Making a 'circuit' (radio path) perform is a matter of having more positive dBs than negative dBs and yes, with some experience you can precalculate this on paper without even building the system.

The most common approach is to first add up the negative dBs of which the majority will be labelled 'free space loss'. The amount of free space loss between any two points is a

There can be problems. Although this particular link registers 59-reference-level (20 minimum acceptable, 99 maximum with meter) video image is impaired by spread-spectrum interference (white horizontal bars). Answers involve careful placement of receive antenna, nulling offending source, modifying polarity of path (see text).



Channelling Options

Ch 1: 2410 (600 mW) or 2413 (1 watt)

On Merit products, set two visible switches both up

Ch 2: 2430 (600 mW) or 2432 (1 watt)

One switch up, one switch down

Ch 3: 2450 (600 mW) or 2451 (1 watt)

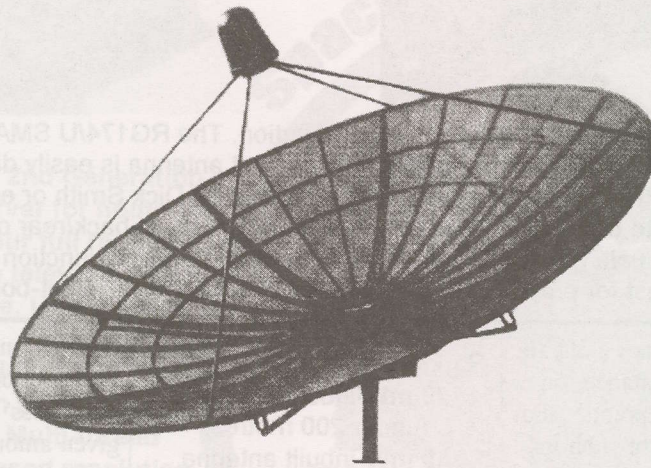
Alternate up, other down

Ch 4: 2470 (MHz) - both models; switches down

Note: Channelling is fairly standard for all 2.4 video gear.

To convert to L-band, S band LNB LO (3650) minus S-band frequency: 2410 = 1240 (MHz); 2430 = 1220; 2450 = 1200 and 2470 = 1180. Use horizontal polarisation to minimise local 2.4 devices.

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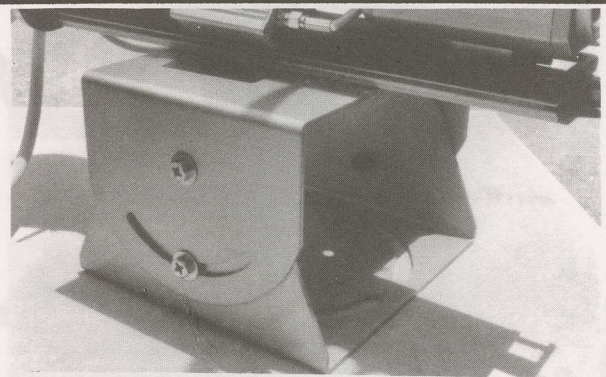
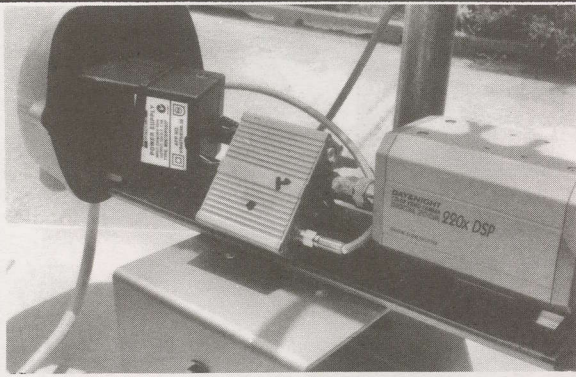
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It all fits (left) inside of Merit outdoor camera housing; caution. The RG174/U SMA male/N male cable from the output of the S-band transmitter looping out to the transmit antenna is easily damaged where it bends at connection point to transmitter; this is only a "semi" flexible cable! Dick Smith or equivalent 1 amp capacity/12V DC power supply will operate camera and transmitter and fits snugly at back/rear of housing. Simplistic, low cost camera mount can be post/pole mounted (right) and will swivel (rotate) at junction with support item for azimuth setting, as well as adjust for proper camera elevation by loosening two set-bolts. Mount is galvanised.

function of (1) the frequency of the transmission, and, (2) the distance on a straight line between the two points. For illustration, let's assume 60 dB of such loss. The most important part of 'free space loss' is "free" which translates to something we call line of sight (LOS). That means no obstructions, no blockage that would prevent the transmitting antenna from "seeing" (in the visual sense) the receiving antenna.

Turn back now to page 8, lower right. This diagram illustrates a 3.4km path at 2.4 GHz where two terrain ridges protrude into the LOS pathway. The first is 12 metres into and above LOS while the second is 21 metres of obstruction. Our tests over another 3.4km path with no obstructions created a reference signal level measurement of 92 (on a scale of 0 - 99 using the SatLOOK meter). But this path, with two significant obstructions, measured 59. Just for reference, any level with our system greater than 20 produces a (FM) sparklie free image and levels as low as 10 are viewable. So 59 is still well above the receiver's 'threshold level'.

Obstructions, then, are akin to increasing the total circuit distance - they produce 'negative dBs'. This might be a good time to point out that LOS is not a requirement - but each

Range versus path/hardware

20 mW-inbuilt antenna
(under 200 metres)

50 mW-inbuilt antenna
(under 500 metres)

50 mW-gain antenna
(up to 1 km)

200 mW-gain antenna.
S>L LNB; up to 30km

600 mW-gain antenna
S>L LNB; over 30km

1 watt-gain antenna
S>L LNB; over 30km

obstruction will have its' own 'negative dB contribution' to the circuit loss. And 'free space loss' is a function of distance. For any given amount of circuit gain (the sum of the positive dBs at both the transmission and reception ends of the circuit) there is a maximum LOS distance that can be covered for a particular category of transmission and the receiver in use. If you add more transmission power, or, increase/improve the reception end positive dBs, the maximum LOS distance increases. So as well with non-LOS paths, such as illustrated on page 8; non-LOS paths and LOS paths are identical in challenge, only the non-LOS will

always be shorter than LOS because of the negative dBs created by the path obstruction which eats into the available circuit loss equation.

Gain at which end?

If local regulations limit the maximum (transmitter) radiated power to a certain number (such as 4 dB eirp in NZ), the logical approach to increasing the available path-loss dBs is to improve the receive end of the circuit. At 2.4 GHz this can be achieved with a larger (higher gain) receiving antenna, with some sort of at-antenna low noise gain (signal amplification), by reducing the feedline loss from the

Parts and pieces: Sources and pricing

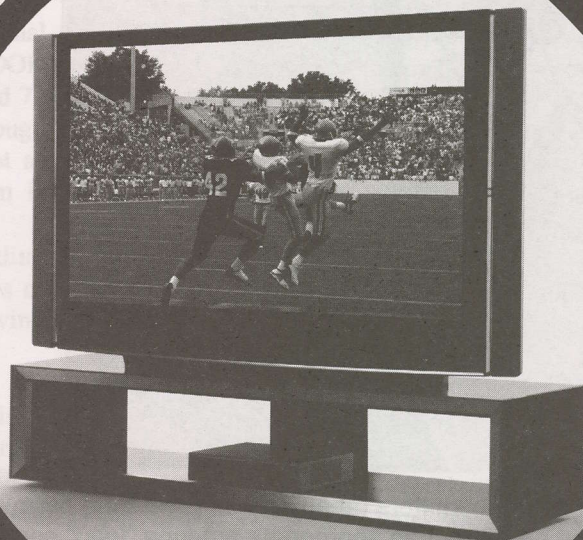
The premiere supplier of 2.4 GHz transmitter and antenna units is perhaps Merit Li Lin, a Taiwanese firm (www.meritlin.com, www.meritlin.com/english/company.html) with distributors worldwide (including New Zealand (www.meritcctv.co.nz; tel 64 9 415 8118, fax 64 9 415 8238). Typical 2.4 GHz transmitters have four separate transmission channels programmed (see list, page 10), 12V DC powering, RCA audio and video input sockets, and a short range SMA connector - fitted 'whip' antenna. Merit 2.4 GHz receivers also have a SMA connector supported whip antenna (can be replaced with external antenna), four pre-programmed channels (it is wise to check the compatibility between their receivers and the transmitter[s] chosen as there can be frequency differences). Out of the box as a system, transmitters range from 0.05 watts (50 milliwatts) to 1 watt. Various receiver options include auto channel scan receivers (intended to allow up to four incoming camera signals to be alternately displayed on a video monitor in a sequence you set). Model RM-2400 LCD receiver (TFT LCD 5.5 inch screen) is a 12V DC or plug pack operated receiver which more ideally would come battery operated to allow it to be used as a transportable - on the move range testing device. Antennas for point to point (receive or transmit) through Merit include the YA-2409 which claims 9 dBd (400mm length) and the larger (770 mm) 13 dBd claimed version. Both have type N fittings, are available with 800mm lengths of miniature coax to connect the antenna to a receiver or transmitter (SMA on opposite end). S>L band LNBS are available from Far North Cablevision, Ltd (see advertisement page 22, SF#136). Alternate receivers will be described in SF#138.



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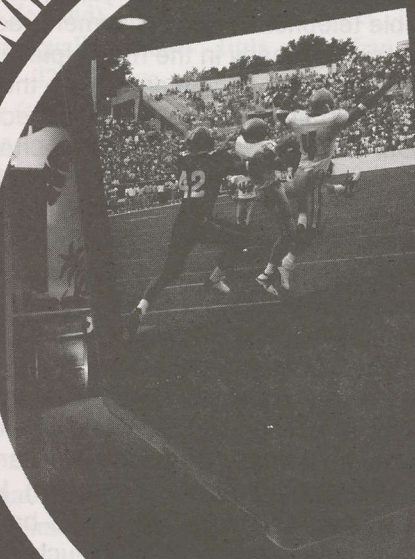


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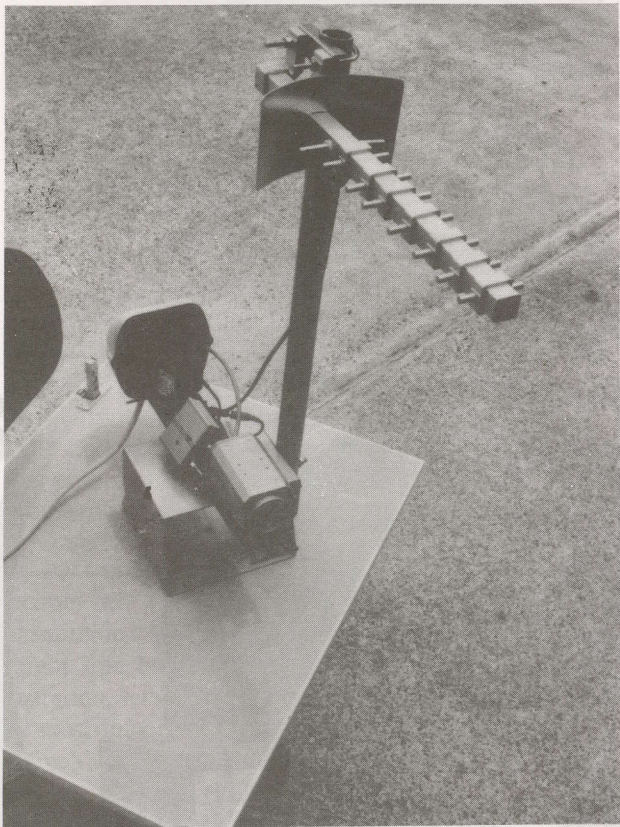
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The S-band transmitters (at any power level from 50 mW upwards to a full watt) are VERY sensitive to being turned on without an appropriate antenna "load" connected (will blow-up the output stage of transmitter, especially in higher power versions). Be extremely careful with SMA to transmitter connection (cross threads are a no-no!) as well as at transmit antenna (load); right (type N male which is more difficult to do wrong).

reception antenna to the receiver, or, by selecting a receiver with better 'threshold' characteristics (greater sensitivity). Regulations limit the transmission power, they do not restrict what you can do at the reception end.

Let us assume that a particular system using some combination of transmitter end gain and receiver end gain plus the all critical receiver threshold (sensitivity) factor has a total possible 'free space loss' number of 60 dB. This could translate to as little as 1km at 2.4 GHz. Remember - the total

circuit loss possible for any path is a function of balancing the positive dBs against the always present path-loss negative dBs. Suppose we made some change that added 60 more positive dBs to the system; what then happens to distances?

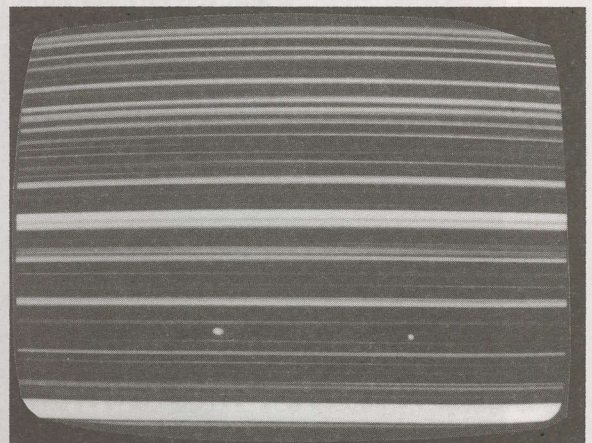
Path loss is a function of distance and obstructions. If there are no new obstructions, each time you double the path length

1km +1 = 2km = +2 = 4km +4 = 8km +8 = 16km +16 = 32km; 4 "doubles" X 6 dB = 24 dB additional loss

The interference conundrum

Because the S-band unlicensed operation region (2,400.0 - 2,483.5 MHz) is shared with everything from microwave ovens to portable telephones and consumer grade WiFi, millions of transmitters are already in the marketplace; true 'plug and play' take it home with you and 'go on the air' devices.

Some level of interference can be expected except in rural areas. Our experience is that ovens, portable telephones and WiFi can be worked around even when the co-users of the frequency band are very close (within 10 metres) of the reception antenna. However, as with any field of endeavour, somebody, someplace will always try to push the limits of what is legal and is not. Therefore 5 watt, even 20 watt, transmitters operating in S-band are out there and if connected to 'spread spectrum' driver sources, they can simply overpower an S>L band system created by your for extended range and maximum sensitivity. Most regions (countries) where rules dictate how much power can be run will provide assistance in tracking down and shutting off over-powered users (think of this as a '27 MHz CB radio' type of problem). High (as in illegal) power restricted to narrow band users (including a single TV channel width of 18 MHz at S-band) can be dealt with by simply moving to a new channel or if they are using one antenna polarity (such as horizontal), switching your own to the opposite (ie. vertical).



the negative dBs increase by 6 (dB). If our 60-dB-loss maximum distance was 1km, by adding another 60 dB of positive dBs 'circuit gain' we improve the maximum distance by 60 dB of additional path loss. Which is?

To increase the maximum path from 1km to 32km adds 24 additional negative dBs to the equation. So 60 dB of new 'circuit gain'? A rather mind blowing 2,048km! No, you are not going to find such a 'terrestrial path' - this is the kind of 'path extension' one finds only when communicating with orbiting satellites.

This is all 'theoretical stuff' - *right?* Not at all. In our SatFACTS tests, the maximum (convenient) LOS path we could create was 30km. Remember the 0-99 relative signal level measurements we routinely make with the SatLOOK Mark III meter? At 30km, LOS, we measured a rock solid 72 - heaps above the threshold of 20 on the meter - a rough indication that with our particular system (good but not as good as it might be) a LOS well in excess of 500km is possible.

And all of this is possible without (materially) exceeding the (NZ) 4 watt eirp limitations. The key ingredient is of course the additional 60 dB of 'circuit gain' at the receiving end. We'll come back to this.

A congested spectrum

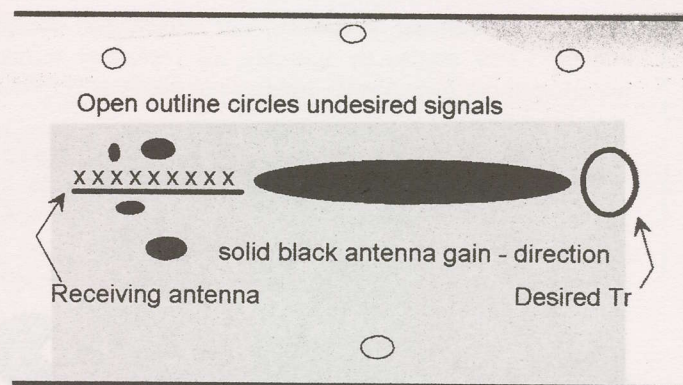
The 2,400 to 2,483.5 MHz unlicensed 'band' spectrum is in a way its' own worst enemy. Everyone walking out of Harvey Norman with a 2.4 GHz portable telephone, or leaving Dick Smith with a video sender, is a co-user of this spectrum. And these are but the tip of the iceberg.

Most such systems have a very limited range - measured in terms of a hundred metres or less; usually a function of negative dB gain self-contained antennas, and, very basic - insensitive - receivers with a high sensitivity threshold. But the 'sum' of dozens, hundreds in your area is significant. And the modulation format is also a factor in the type (category) and level (strength) of interference to be expected.

The television format employed is FM (frequency modulation) and there are more or less standardised 'channels' (four in all) within the spectrum (see list, page 10). Even low-cost (DSE) video senders pretty much respect this channelling although there are no regulations that require it. Telephones, WiFi and data links are only required to stay within the band edges to be legal - and not exceed the maximum radiated power. A number of systems employ 'spread spectrum' technology that essentially uses the entire 2,400 - 2,483.5 MHz region simultaneously while others use a 'frequency hopping' technology that moves (to a pattern) the transmitter frequency around at frequent intervals. None of this makes co-spectrum use of video easy and in fact when you tack-on 60 new *positive* dBs of circuit gain (sensitivity), all of those near and distant transmitter sources rise up and begin to interfere with your selected circuit signal source.

(That is the bad news. For a different flavour on this problem, join us in the February SatFACTS as an Australian reader discloses how his souped-up S-band system is used to 'tap into' his neighbourhood devices, "Allowing me to watch their DVD and pay-TV in-house links". Not to mention their in-house wireless security cameras!)

Interference sources are a 'point source' - they are in a particular location, reference your location(s), and by employing directional (positive dB gain creating) reception antennas, it is often (not always) possible to adjust the



receiving antenna heading to minimise or eliminate the interference. The most commonly employed antennas, multiple element Yagi design, have frontal-direction reception patterns of only a portion of a circle - such as 30 to 45 degrees. If the antenna can be adjusted to collect a suitable signal level from the desired transmitter, but less signal from non-desired sources, this will partially solve the problem (see diagram here).

Interference in video reception depends totally on the type of modulation format of the offending transmitter. Most interference consists of horizontal lines of varying widths, some of which pulse (pump up and down in level against the desired video); see illustrations, pages 10 and 14.

Those 60 'positive' dBs

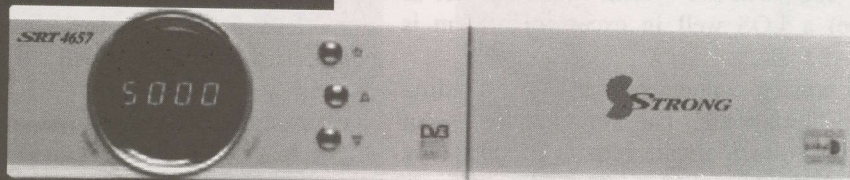
The original regulatory intent in creating the 2,400 - 2,483.5 MHz license free band was totally contrary to the rationale behind this report. The logic was this: Short range communications, over tens of metres to perhaps a kilometre, was an important missing option. Some products simply defy licensing because of the volume of sale. Others, such as microwave ovens, are not "communication" devices - they simply generate RF signals in performing some function (such as heating your dinner). All of this and much more has ended up in the 2.4 GHz region; the "garbage pit / tip" of the radio frequency world.

Those Dick Smith (and other - we are not singling out DSE!) low cost 2.4 devices, including 'Video Senders', are designed to be cheap; very cheap. There are no superfluous parts inside, they do nothing more than the very basic functions. Most use 20 to 50 mW (milliwatt) transmitters, attached to a case-mounted flat-plate antenna. Their radiated (eirp) power is in the region of 0.1 to 0.5 dB eirp, well below the (New Zealand) 4 watt permissible level. The companion receiver is equally austere - little more than a crystal set of yesteryear. They have almost no sensitivity, very little selectivity (ability to reject other 2.4 GHz range signals) and even when they manage to 'connect' between two points, very slight variations (such as opening a door in the home) will impair the reception quality.

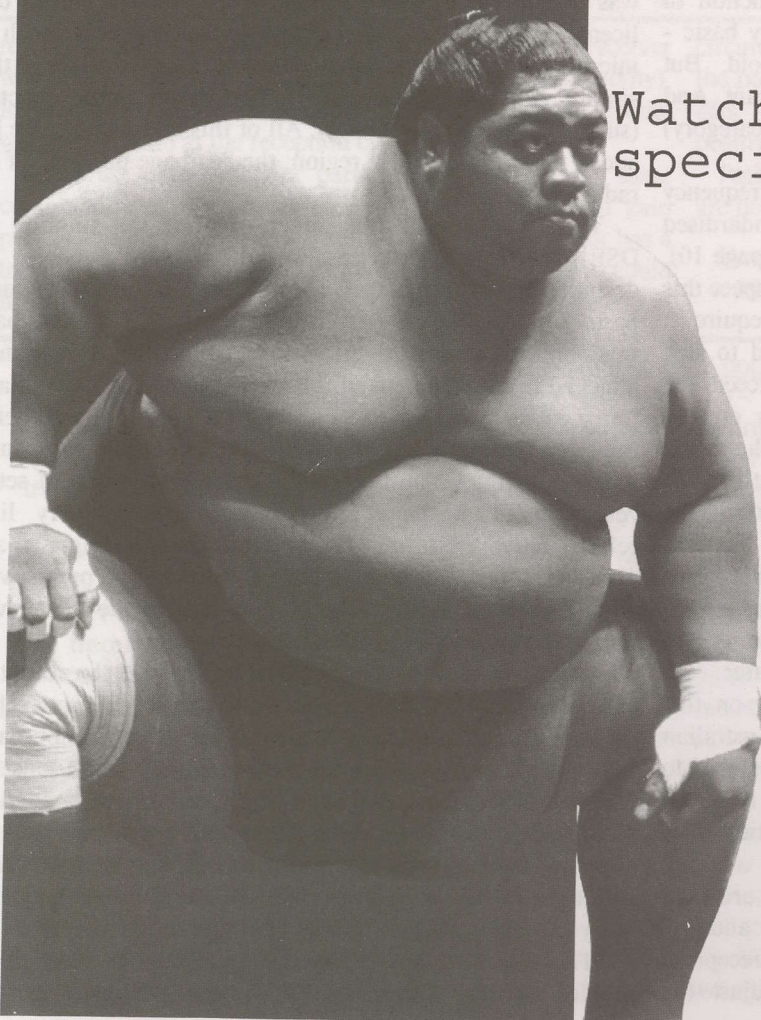
And while it might be possible to improve the reception characteristics by modifying (or designing from scratch; [2]) an existing receiver, this is seldom a cost effective approach. You would not start down the road to build a super sensitive receiver for any frequency band with a crystal set foundation. 'Commercial' 2.4 GHz video packages from firms such as Merit (3) include modestly improved receivers to companion with their 50 mW and up transmitters but their design leaves many (negative) dBs in the way of longer range reception.

The technical answer to this quandary is surprisingly simple; starting with a suitable transmitter married to a

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suitable transmitting antenna. Now attack the reception system. This begins by ignoring all consumer receivers, including those from Merit - unless your needs are in the 1 or 2km down region.

Receive end antenna gain is straight forward to build positive dBs. 9 or 13 element yagi designs from Merit are good value and provide up to 10 dB (gain over a dipole). The next step is a grid reflector antenna (see photo, page 10) for which there are numerous configurations (we will detail in a future SatFACTS). Positive dB gains in excess of 20 are possible with this level of antenna.

But the real boost in positive comes from abandoning 2.4 receivers and frequency shifting the S-band (2.4) down to L-band (1.2 GHz). We spell frequency shifting as LNB - low noise block (downconverter). The principal is identical to LNBs for C and Ku; an input frequency (2,400 - 2,483.5) amplified first at the input frequency with ultra low noise transistor devices. Then the low noise amplified signal is mixed with a local oscillator (3,650 MHz in our example) and the "difference" frequency is produced ($3650 - 2400 = 1250$ MHz; 1.25 GHz). Finally, inside the LNB weather proof case, the new 1250 MHz frequency converted signal is amplified again. The total 'LNB package' gain is in the region of 50 dB. But there is more. The noise figure of the LNB is under 0.5 dB whereas the best of the semi-commercial (surveillance grade; Merit) receivers have a noise figure in excess of 11 dB. SO here are another 10 (.5) 'positive dBs' to add to the circuit; 50 dB gain in the LNB plus 10 in the front end threshold improvement equals 60 dB.

A purist would also point out that even a very modest analogue L-band receiver, covering 950-1450 MHz, has 30-50 additional dB of gain beyond that available in a DSE video sender receiver or the Merit semi-professional versions. Thus, by switching from "2.4 Direct" to "2.4>1.2 Converted" the total circuit gain added approaches 100 dB.

Which creates a new challenge. The system, using S to L band conversion, is now a finely tuned ultra sensitive receiving system. So much so that strong local signals, even from a DSE Video Sender, can create overload for the LNB, or the L-band receiver. More than one user reports connecting the S-band LNB to an L-band receiver, sticking a bent (metal) paper clip into the LNB input (LNB inside, laying on a bench) as an 'antenna' and finding near perfect reception from DSE Video Senders a kilometre distant. You can work out yourself what a 'real antenna' mounted on your roof will do!

We experienced this in our location when a new-to-air spread spectrum transmitter began operating. Our own video signal paths measuring under 75 on our reference meter instantly had horizontal lines in the image (photo, page 10). Using that meter, a portable 9 element Merit yagi and the S>L band LNB, we went source-hunting in a car, trying to trace the source back to a specific transmission site. We found it, calculated it appeared to be using far more than 4 watts eirp, and contacted the Radio Inspector for our area. He arrived with professional measurement equipment, and a broad frequency range log periodic antenna to source the interference. Standing in our yard, not a sniff of the interference while just metres away one of our S>L band receiver packages with only a bent paper clip for antenna was displaying the interference signal. Conclusion? We have tens

of positive dBs (possibly as many as 80) better sensitivity than the RI's pristine Hewlett Packard package. Which serves as a warning of sorts - you may not be able to convince the radio-police that somebody is over powered when you are using this ultra-sensitive system.

If you think you have overload ...

Which brings us to the final design criteria. With so much circuit gain, and an unknown number of signals in your $2,400 > 2,483.5$ spectrum at varying signal levels, it is possible to create overload in your receiving system. How can you tell?

1/ If the system is receiving signals from one or more transmitter sources, you don't have overload (LNB or L-band receiver overload simply shuts the system down - you see nothing at all but ragged lines or sparklies/snow).

2/ If the system seems totally dead, disconnect the antenna from LNB and what you should see on the screen through the L-band receiver is black and white dancing snow dots. Turn the 18 volt DC LNB power off and the snow level should immediately reduce in intensity. The "snow" verifies the LNB is working.

3/ Video transmitters such as those available from Merit are FM (frequency modulated) - the same format as analogue satellite signals (which is why you are using them for terrestrial link reception). However, the video is (reference analogue satellite) 'narrow band'; around 18-20 MHz modulation width rather than the more common 27 or even 36 MHz modulation width for satellite.

The ideal analogue receiver for this application will have an adjustable IF bandwidth - for example the older rack mount Winersat WCR100 which allows you to match the 18-20 MHz modulation bandwidth of the transmitter (including DSE and other video products) to an identical 18-20 MHz L-band bandwidth. The sensitivity and the selectivity of the receive system will be significantly improved by this simple adjustment at the analogue receiver.

4/ In our experience, the LNB seldom overloads, even when we are testing a 600 mW transmitter only feet away from a full LNB S>L receiving antenna. But the combination of LNBf gain and L-band receiver gain will, on rare occasions, cause the receiver to overload. Solution? Reduce the gain of the L-band receiver end by placing a power passing 10 dB (as a start) in-line attenuator at the L-band input F connector of the receiver.

Next month

Some field experience using the 2.4/50 Range Extender and homebrew antenna systems to allow you to test S-band in your area using other folks existing transmitter; neighbourhood snooping!

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The next big business opportunity: Live Two-Way Video over Satellite - FREE!

OK - so the satellite install business sucks and free to air reception has taken yet another nose dive in consumer interest. There are only so many folks who need MATV and SMATV systems installed, even with DVB-T promising to turn into an installer money spinner in a few years time. What new technology, looming on the horizon, holds the promise of becoming a major source for your small business in the coming 12 months?

One answer may surprise you - yes, it involves Internet and it is the sort of thing which a skilled home dish system installer can do provided you have a basic understanding of home PCs and are not afraid to load new software into a client's machine. And in at least one form, it involves satellite which is the element that will separate you from the guys who only know how to run RG6 cables.

The "hook"

For a new product or service to catch on with consumers, it needs a 'hook' - something which makes it so appealing that even resistant buyers are captured by the allure. Here's one. Live video connection between any two points - a telephone with pictures.

Old hat you say? Been around for a while (1)? Well, it gets much better. Let's change the description to "*FREE video connection*" between any two points. Yes, the key word is *FREE*.

The uses for *FREE* video over Internet are limited only by your imagination (and sadly will include as early adopters folks who like to 'show off' to a distant contact - the same people who hang out at adult 'product' shops). But hey - they are money spending consumers and your job is to first sell the product + service, and then to collect your payment.

The key to *FREE* is new hardware, new technology, and a very smart marketing program created by Australian firm Global Touch Solutions Australia (www.my-freetalk.com; Email info@my-freetalk.com). This month we will describe the system to you in general terms simultaneous to SatFACTS testing the system over widely separated global points (Sydney, New York, Moscow, Malaysia and our office in New Zealand) which we will detail in SatFACTS #138 (February 2006).

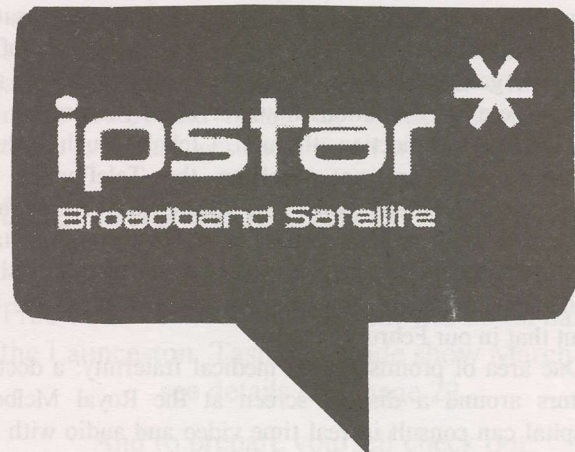
The basics

There is a piece of hardware, think of it as a telephone handset with a 100mm (diagonal measurement) LCD screen plus normal telephone calling buttons and a host of special features. It plugs into the telephone line, can be used as a standard telephone with or without the video component. Yes, it also has a reasonable quality TV camera which the user adjusts to pick up the image they wish to transmit. External connection points (RCA sockets) allow direct links to external video sources (camcorder, VCR or DVD player, even security camera systems) as well as external displays (any TV

1/ Two-way video telephone was first demonstrated by AT&T in 1929 between New York and Washington.



GLOBAL TOUCH
SOLUTIONS



with external video input sockets). The telephone device is uniquely an "Internet Videophone" with the ability to transmit full motion (user selectable 15 or 30 fps-frames per second) images to any connection point available through a web connection. And, receive images from any similar device anyplace in the world. Yes, even without the *FREE* element, videophones have been around for some time. But the quality - yuck! ISDN connected protocols simply don't work very well. This Internet Protocol approach solves virtually all of the jerk-tear/sputter problems so common with ISDN.

Now the *FREE* part.

The service created by Global Touch Solutions Australia requires 128kbps/up-outward bound and 256kbps/down-inward bound links. Up and down? That's the satellite connection. In Australia, New Zealand and portions of the Pacific where the new Thaicom 4/IPSTAR satellite is available, this package becomes an add-on to normal web connections extending VoIP telephone and VoIP video to the user's mix. Within the IPSTAR broadband satellite service package, Voice over Internet Protocol (VoIP) connections are free. Make that *FREE*.

VoIP is a digital system that converts voice or video to data packets for transmission, decoding those packets at the receive end for normal 'analogue' display on either the handset videophone or an external video monitor. The videophone has user adjustable settings that creates the best picture possible with varying Internet connection parameters. And because it is Internet, two or more simultaneous points can communicate with each other (or one selected 'terminal phone') - there is even provision for up to four separate images from four different points to be 'split screen'

displayed, making local, national and international 'video conference calls' practical.

VoIP (whether audio or video - remember, once the sound or video is converted to digital packets, they are all handled in the same manner by the web) is a reasonable user of any Internet subscriber's allocated down (and up) load totals. In other words, *FREE* is a part of a user's normal megabit or gigabit monthly totals.

Alternate uses

The basic videophone (one version of which is called 'TelePhoSee', the device SatFACTS is testing as you read this) is directly connectable to not only the IPSTAR supported Global Touch Solutions satellite system, but also to any reasonably high speed (such as 256kbps) PSTN web based network connection. Which means the system is totally adaptable to virtually any location, whether satellite supported or not. VoIP or VoIP Video is packets of data without regard to how it is transported between two (or more) sites. There are limitations however when you are not using the IPSTAR connection through Global Touch Solutions Australia; they are not reselling the TelePhoSee as a consumer stand-alone box. This means that access to the *FREE* part requires being a user of GTSA through Ipstar, or some clever research on your part to acquire similar connections through your present Internet provider. More about that in our February report.

One area of promise is the medical fraternity; a doctor or doctors around a display screen at the Royal Melbourne Hospital can consult in real time video and audio with say a regional medical centre in New Zealand, or Fiji or Singapore directly through IPSTAR satellite links, or, world-wide using the PSTN network. GTSA has a number of world-wide connection points (such as Viet Nam, Malaysia to name but two) where the Ipstar connection does function - and the number of such participating 'countries' is growing weekly. Further, any medical machine that 'outputs' in digital or can

Technical Parameters - GTS VoIP

Basic connection speed for high quality (25/30 frames per second) video: 128kbps up/out to 512kbps down/in xDSL

Minimum xDSL connections: 256/512kbps

be externally converted to digital can be injected into the link through connections on the telephone base videophone unit.

The key to all of this happening has been the rapid development of industry protocols translating virtually any type of data stream to a digital format which then becomes instantly compatible with the Internet.

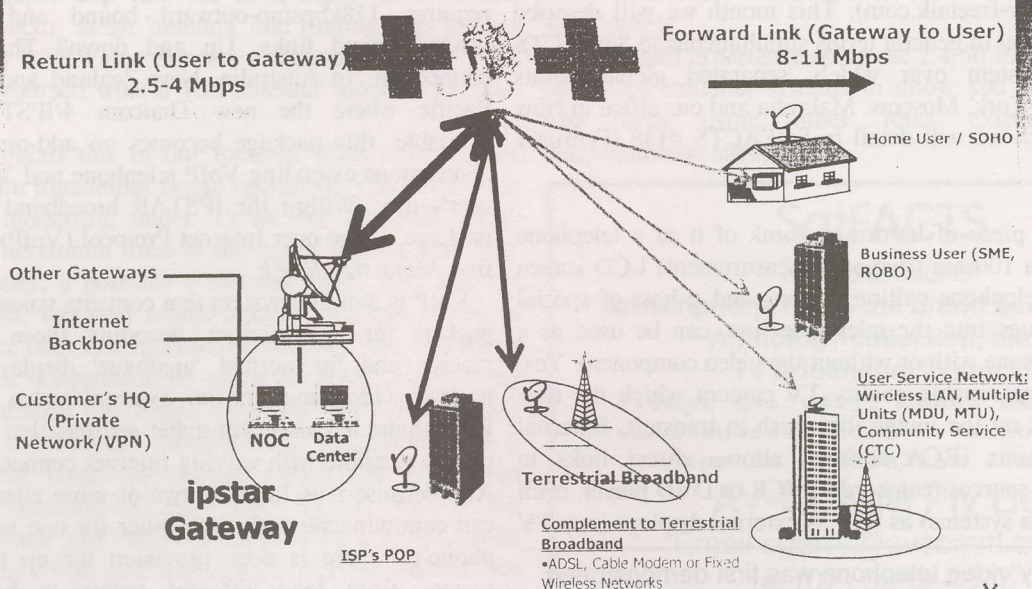
Family video exchanges, business video, distance medical consultations, deaf video (allowing hearing impaired to communicate for the first time using signing - a very popular use), multimedia video links (possibly a low-cost way to send normal television programming from one point to another - SatFACTS will have a report in February), remote monitoring of security cameras (even to compatible 3G and 4G hand cell phones), PC web video applications - essentially anything that can be converted to digital packets can be shared on the web using VoIP video.

The applications are as varied as your imagination and no doubt as the protocol becomes better known the uses will become as varied as the users.

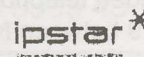
Primary marketing opportunities

For satellite installers, the first step is contacting Global Touch Solutions Australia (see contact info, page 19) to learn how homes or businesses located where traditional wireline broadband is not available can be enjoying *FREE* telephone (plus video) connections. This involves sales and installation of two-way Ku-band satellite hardware in addition to the connection of a customer's PC (this being the logical reason why they are interested in satellite). The TeleProSee addendum is a no brainer, coming with full instructions, an assigned VoIP "telephone number" and a self-instruction CD.

ipstar Broadband Service Infrastructure



Shin Satellite PLC & ipstar Co., Ltd. Proprietary & Confidential



Outside of the satellite connection, the TelePhoSee can be sold (and installed) to PSTN consumers although the users may not have FREE service with their existing Internet provider. We will have a more complete technical report in SatFACTS for February.

Early impressions

The most impressive initial reaction to the TelePhoSee may be the 90 plus page exquisitely illustrated user manual. And it can also be the most intimidating for a no-knowledge consumer. TelePhoSee out of the box is with GTSA + Ipstar a plug and play device. GTSA assigns a 'web' number to each box and sets it up to be connected directly to your PC or broadband phone line with cables (provided).

The device has room to store 300 telephone numbers and to operate you simply select on screen the number required and push 'send'. The camera and system may be left on full-time, which means someone dialling your number will see what the camera sees when in 'auto answer' mode. Of course you can override 'auto' should you be concerned about people 'dropping in' uninvited. A 'message storage' function allows callers to you when you are not present to leave a video (or audio only) message which is recorded for later review - think of this as an answering machine with video added.

The 100mm/4" screen automatically configures during a call to the person calling occupying approximately 80% of the screen and in a box (which you can locate in any of several positions on the screen) your own camera's view. A swivel on the combination screen and camera is adjusted to create the particular scene you wish transmitted. A handset allows you to talk 'privately' while a 'speaker-phone' option allows any number of people to participate.

The video and audio functions, including the quality of the image transmitted and received, are fully adjustable to compensate for varying Internet connection parameters. We found the handset option preferable if you are alone as the voice quality through the built-in speaker is a bit on the 'tinny' side. However, as we subsequently learned, this can be adjusted over a wide range by changing the parameters of the Internet Protocol - something we will address in February.

The video quality is for anyone who has fooled with web cams and other Internet video connections surprisingly robust. At 15 fps setting, you have greater detail than at the 30 fps level but fast motion (waving your hand at the camera) works better at 30. On the 100mm/4" screen the images are comparable with 1985 or so VHS - certainly not VHS-S but far better than you probably expect. No, this is not TV2Me by any stretch of the imagination but it is significantly better than the mass produced Slingbox 'space shifter' device (SatFACTS August 2005). Overall, with FREE service through GTSA and Ipstar, the system shows significant promise to capture consumer interest at many levels.

See This Working in Tasmania!

The Global Touch Solutions Australia iPSTAR 'Free Talk' / 'Free Video' system will be on hand at the Launceston, Tasmania trade show March 2-4; see details here page 22.

And to prepare yourself check out:
www.mv-freetalk.com

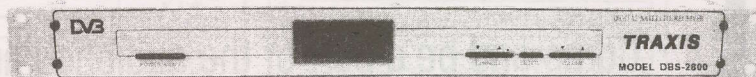


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SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 JAN, 2006

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym
Thm3/78.5	SkyChAust	3695/1455H	up to 3	3/4	5(,000)
	ANT Greece	3672/1478H	1 TV	3/4	13(,333)
	TARBS ME mux	3640/1510H	12TV, 12 radio	2/3	28(,066)
	Ch Nepal	3626/1524V	1	3/4	15(,556)
	Mahar mux	3600/1550H	11TV, 1 rad	3/4	26(,667)
	RR Sat mux	3551/1600H	8TV, 10 radio	3/4	13(,333)
	TVK Cambodia	3448/1702H	1TV	1/2	6(,312)
	TARBS/Th5	3480/1670H	12 TV+radio	2/3	26(,667)
	Thai Global	3425/1725V	up to 7?	2/3	27(,500)
	ETV mux	4005/1145V	6+ TV	3/4	27(,000)
InSat 2E/83	Hyd Dig 2E	3910/1240V	1	3/4	5(,000)
	Kairali TV	3699/1451V	1	3/4	3(,184)
	Indian mux	3643/1507V	3	3/4	19(,531)
	Sky Bangla	3430/1720V	1TV	3/4	6(,000)
NSS6/95E	Ant Pac (Greek)	11.104H-Australia	1 TV	3/4	2(,800)
As2/100.5E	Guangdong TV	4075/1075H	1TV + radio	3/4	6(,000)
	Euro Bouq	4000/1150H	5TV, 19 radio	3/4	28(,125)
	SatLink	3960/1190H	3TV	3/4	27(,500)
	Reuters News	3905/1245H	1TV	3/4	4(,000)
	WorldNet	3880/1270H	4+/18radio	1/2	20(,400)
	APT Asia	3799/1351H	1	3/4	5(,632)
	Reuters/Sing.	3775/1375H	1	3/4	5(,631)
	APT Asia#2	3705/1445H	1	5/6	4(,166)
	Macau MUX	4148/1002V	5TV	3/4	11(,850)
	Dubai MUX	4020/1430V	4+, radio	3/4	27(,500)
	Trace TV	3792/1358V	1	3/4	2(,400)
	BYU-TV	3767/1383V	1 + 20 audio	1/2	6(,530)
	3-ch miniMUX	3752/1398V	up to 3	3/4	5(,640)
	Saudi TV1	3660/1490V	7+/tests	3/4	27(,500)
	CETV digital	3680/1470H	1+ TV	3/4	26(,670)
	Zee bouquet	3700/1450V	10TV	3/4	27(,500)
	Ch News Asia	3706/1444H	1TV (+)	3/4	6(,000)
	Azio TV	3716/1434H	1TV (+)	3/4	7(,000)
	BT World	3725/1425V	1TV	3/4	4(,450)
	TVB 8	3729/1421H	1TV	3/4	13(,650)
	Zee Movies	3732/1418V	3TV	3/4	6(,500)
	TV One	3739/1411V	1TV	3/4	2(,8934)
	SAB TV	3743/2407V	1TV	3/4	3(,300)
	Fashion TV	3747/1403V	1TV	3/4	2(,625)
	AAJ-TV	3750/1400V	1TV	3/4	2(,820)
	Arling TV	3755/1395V	1	7/8	4(,418)
	Now TV +	3760/1390H	up to 10TV	7/8	26(,000)
	Star TV	3780/1370V	7(+TV)	3/4	28(,100)
	GXTV	3806/1344V	1TV + 3 radio	3/4	4(,420)
	Shaanxi TV	3813/1337V	1TV + 2 radio	3/4	4(,420)
	Anhui TV	3820/1330V	1TV + 2 radio	3/4	4(,420)
	Jiangsu TV	3827/1330V	1TV + 2 radio	3/4	4(,420)
	HLITV	3834/1316V	1TV	3/4	4(,420)
	Star TV	3840/1310H	7(+TV)	7/8	26(,850)
	Star TV	3860/1290V	5(+TV)	3/4	27(,500)
	Arabsat MUX	3880/1270H	10+TV, 14Radio	3/4	27(,500)
	Dragon TV	3886/1264V	1 TV	3/4	4(,800)
	Shaandong	3895/1255V	1TV + 6 radio	3/4	6(,813)
	CCTV1	3904/1246V	1TV, 1 radio	7/8	4(,420)
	Jilin TV	3914/1236V	1TV + 2 radio	3/4	4(,420)
	Star TV	3920/1230H	4+ TV	7/8	26(,850)
	CNN	3960/1190H	8TV, 1 radio	3/4	27(,500)
	StarTV	3980/1170V	6+TV	3/4	28(,100)
	Star TV	4000/1150H	8(+TV)	7/8	26(,850)
	Sahara digital	4020/1130V	8TV, 1 radio	3/4	27(,250)
	Hubei TV	4035/1115H	1TV + 2 radio	3/4	4(,420)
	Tianjin TV	4046/1104V	1TV + 2 radio	3/4	5(,950)
	Sichuan TV	4051/1099H	1TV + 1 radio	3/4	4(,420)
	Qinghai TV	4067/1083H	1TV + 2 radio	3/4	4(,420)
	Hunan TV	4082/1068H	1TV + 1 radio	3/4	4(,420)
	Fashion/HK-Asia	4088/1062H	1TV	3/4	2(,626)
	Pakistani TV	4091/1059V	4TV, 1 radio	3/4	13(,333)
	Sun TV	4095/1055H	1	3/4	5(,554)
	PTV National	4106/1044V	1TV, 1 radio	3/4	3(,333)
	TVB8 Mux	4111/1040H	4 TV	3/4	13(,650)
	Indus News	4115/1035V	1	3/4	3(,331)
	CCTV bqt	4129/1021H	4 TV, 4 radio	3/4	13(,240)
	Zee Bqt #2	4140/1010V	8(+TV)	3/4	27(,500)
	Henan TV	4166/984V	1TV + 8 radio	3/4	4(,420)
	Fujian TV	4180/970V	1TV + 2 radio	3/4	4(,420)
	Jiangxi TV	4187/963V	1TV + 2 radio	3/4	4(,420)
	Liaoning TV	4194/956V	1TV + 2 radio	3/4	4(,420)
Cak1/107.5	Indovision (S-band)	2,535, 2,565, 2,595, 2,625, 2,655	33(+TV)	7/8	20(,000)
T Kom/108E	IndoBqt	3460/1690H	up to 6	3/4	28(,000)
C2M/113E	TPI	4185/965V	1	3/4	6(,700)
	TVE Asia-Africa	4160/990H	1	3/4	5(,632)
	Anteve	4144/1006V	1	3/4	6(,510)
	Kabelvision Mux	4080/1070H	7+ TV	7/8	28(,125)
	Indostar	4074/1076V	1	3/4	6(,500)
	Satelindo	3935/1215H	1	3/4	6(,700)
	Bali TV	3926/1224H	1	3/4	4(,208)
	Indo MUX	3880/1270H	3+ TV	7/8	28(,121)
	TVRI	3765/1385H	1TV	3/4	5(,555)

Receivers and Errata

CA (#1, 3); FTA audio #2
Late July 04: room for more (FTA)
CA + 23FTA(AITV, IRB3, Visjon Norge, Pakistan)
New 03/03; FTA
Thai + Indian services; FTA inc. Vibe TV, Sindi: TV
3TV, Sradio inc. Hellas TV Greece FTA
FTA
3FTA: TV5, VTV4, ATN Bangla
FTA (reaches SE Australia)
Several ETV now here; wide beam
SCPC, OK E. Aust. wide beam
SCPC, OK E. Aust wide beam
corrections 12/02
New - November 2002
(still) FTA 11-04; was 11.083H
July 04: FTA
FTA TV + radio; closing down mid-Jan 2006
Real Madrid (V769, A770) English FTA
Was 3923H; sometimes FTA
FTA; multiple audio services V2360, A2320
Sometimes FTA; also 3895Vt
FTA & CA
FTA and CA - NASA reports included
5 chs TV, FTA, some tests
FTA + Dubai Sports Ch some English, soccer-
new here Dec 2004; Euro-French music videos
Increased coverage; great variety audio chs(03-05)
Sun-TV, Surya TV, KTV (FTA)
FTA MCPC; Yemen, MBC EUROsport tests
replaces analogue same freq. V33, A32
Now SECA 2 CA (10-04); Radio Aust. Eng. A2011
English + V1160, A1120; 525, 625 versions
Was parallel to 3640Hz analogue (now gone)
Conax CA, all Hindi films
Also reported 3.333, 3/4 October 2005
SAB may no longer here here; moved to NSS-6?
new frequency October 2005
New April 2005; English, urdu
FTA SCPC; New PIDs V3601, A3606 June 2003
CA + FTA; Euro bouquet moving here (late 2005)
NDS CA (Pace DVS211, Zenith)
Guangxi TV; was As2
Was As2
Was As2
Was As2
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
New April 2004: link to Optus B3 Globecast
Shanghai
Apparently Mongolia
Star Sports Asia (+), FTA NTSC; V514, A670 (10-04)
PowVu CA; new SR Apr 29; CNN radio FTA
NDS CA; Star News India FTA VPID 514, APID 648
NDS CA w/ 4(Chinese) FTA
New Sr September 2004
Was As2
new December 2004
Was As2
Was As2
Was As2
New July 2005
new Sr, channels, Nov 2003
"History Channel" - SCPC, some English
MATV Ch Movies now Irdeto 1
Hindi (+ "Plus"); day parts
moved from 4115
Now SECA 2 CA (10-04); 1 occ. FTA (varies)
Was As2
Was As2
Was As2
Was As2
NDS CA using RCA/Thomson,
Pace IRDs; 2.535 has 2 FTA
also 3586H/17.500, 3496H/19.615
FTA SCPC; NT/NC only
New August 2003
change from 4055V, FTA SCPC
also try 3500H, 27.000, 3/4, strong NZ
FTA (new 06-03); V2201, A2202
test card - only - reported
FTA, may not be active full time
FTA; Sr change 01/03; erratic
bounces btwn FTA and CA; unreliable (12-04)

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
	Brunei/Sing	3733/1417H	1TV	3/4	6(,000)
	SCTV	3726/1424V	1TV	3/4	6(,620)
	RCTI	3473/1677H	2	3/4	8(,000)
As4/122E	CCTV internal	4100/1050V	6	3/4	27(,500)
Jc3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(,000)
	Asian bqt	3960/1190V	up to 8	7/8	30(,000)
Ap6/134E	Multiple	4140/1010V	up to 8	7/8	27(,500)
T18/138	Tests	3460/1690V	8	3/4	30(,000)
	LTV Laos	3804/1346V	1		
Am3/140	STS +	3731/1419R	1	3/4	3(,200)
Jc2A 154	BYU-TV	3915/1245V	1+ 20 languages	3/4	4(,166) (?)
MeasSs2	Astro Mux	11.602H	up to 17TV	3/4	41(,500)
	VTM MUX	11.522V	3 TV	3/4	9(766)
R3/152	AuroraBiz	12.407V	4 TV, 10 radio	2/3	30(,000)
	UBI tests	12.425V	up to 13 TV + radio	3/4	22(,500)
	Globecast 2	12.525V	13 TV, 8 radio	2/3	30(,000)
	Globecast (feeds)	12.550-.555V	1TV	3/4 & 2/3	6(,110/.670)
	Globecast	12.564V/T13	2+ TV	2/3	30(,000)
	UBI tests	12.613H/T14L	11+TV	3/4	22(,500)
	UBI tests	12.640H/T14U	11+TV	3/4	22(,500)
	Globecast 1	12.658V/T7	14TV, 15 radio	2/3	30(,000)
	UBI tests	12.674H/T15L	11+TV	3/4	22(,500)
	UBI tests	12.701H/T15U	11+TV	3/4	22(,500)
	WA ABC	12.702V	1 TV, 1 radio	7/8	14(,288)
	WA SBS	12.720V	4TV, 2 radio	5/6	12(,600)
	WA GWN/WIN	12.738V	2TV	7/8	14(,295)
C1/156E	Internet tests	12.288V/T1L	no regular TV	1/2 - ?	28(,650) (?)
	Aurora	12.324V/T1U			
	Pay TV	12.365V/T2	11TV, 2 radio	3/4	27(,800)
	Aurora Home	12.407V/T3	5 TV, 13 radio	2/3	30(,000)
	Pay-TV	12.447V/T4	5TV, 4 data	3/4	27(,800)
	Pay TV	12.487V/T5	3+ TV, data	3/4	27(,800)
	Aurora 2	12.527V/T6	7TV, 20 radio	3/4	30(,000)
	Pay-TV	12.567V/T7	10 TV	3/4	27(,800)
	Pay-TV	12.607V/T8	10 TV	3/4	27(,800)
	Pay-TV	12.647V/T9	10 TV	3/4	27(,800)
	Pay-TV	12.692V/T10L	6TV, 27 radio	1/2	28(,650)
	Aurora MUX	12.728V/T10U	4TV, 17 radio	1/2	24(,450)
	Austar	12.305H/T11	6TV, 24 data	3/4	30(,000)
	Pay-TV	12.358H/T12	10 TV	3/4	27(,800)
	Pay-TV	12.398H/T13	10 TV	3/4	27(,800)
	Pay-TV	12.438H/T14	6TV, 3 data	3/4	27(,800)
	Pay-TV	12.478H/T15	10 TV	3/4	27(,800)
	Pay-TV	12.518H/T16	10 TV	3/4	27(,800)
	Pay-TV	12.558H/T17	10 TV	3/4	27(,800)
	Pay-TV	12.598H/T18	10 TV	3/4	27(,800)
	Pay-TV	12.638H/T19	10TV, 30 radio	3/4	27(,800)
	Pay TV	12.688H/T20	11TV	3/4	27(,800)
B1/160	7 Central DTV	12.365H	1TV	3/4	5(,100)
	Occ. feeds	12.380H	1 TV - *	3/4	6(,111)
	Occ. feeds	12.384V	1 TV - *	3/4	6(,111)
	Net 7 service	12.397H	1	3/4	7(,200)
	Imparja mx	12.379H	2TV + 8 radio	3/4	5(,424)
	7 digital feeds	12.397H	1TV	3/4	7(,200)
	Feeds to NZ	12.411V	1 TV	3/4	6(,111)
	SBS Mux	12.420H	3+ TV, 2+ radio	5/6	12(,600)
	TVNZ DTH	12.456V	5+TV	3/4	22(,500)
	TVNZ Tests	12.483V	up to 11TV	3/4	22(,500)
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(,500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(,500)
	Sky NZ	12.644/671V	9TV	3/4	22(,500)
	ABC HDTV	12.610H	5TV	7/8	14(,3288)
	Sky NZ	12.707/734V	8+TV	3/4	22(,500)
P8/166E	ABS-CBN	12.575H	4+TV, 4+ radio	2/3	13(,845)
	JEDI/TVB	12.686H	11+ TV	3/4	28(,126)
	ABC A-P	4180/970H	2TV, 2 radio	3/4	27(,500)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(,125)
	Taiwanese MUX	4080/1070H	12+ TV	5/6	30(,000)
	NHK Joho	4060/1090H	7TV, 1 radio	3/4	26(,470)
	FOX Mux	4040/1110V	up to 5TV	7/8	26(,470)
	NET +	4121/1029V	1 TV	3/4	4(,774)
	ESPN USA	4020/1130H	8+TV, data	3/4	26(,470)
	Discovery	3980/1170H	8 typ.	3/4	27(,690)
	CalBqt/Pas8	3940/1210H	up to 3+ FTA	7/8	27(,690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(,500)
	Filipino MUX	3880/1270V	up to 8TV+radio	5/6	28(,694)
	TaiwanBqt	3860/1290H	12TV + 30 r	5/6	28(,000)
	CCTV Mux	3829/1321H	up to 4 + 1 radio	3/4	13(,240)
	TVBS-N	3836/1314V	1FTA , 4+ CA	3/4	22(,000)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(,632)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(,000)
	Discovery Asia	3764/1386V	Up to 6 TV	3/4	19(,850)
	MTV	3740/1410H	8	2/3	27(,500)
P2/169E	WA Mux Pv	12.281V	3+ TV, radio	2/3	27(,500)
	Ariang TV	12.401V	1TV	3/4	4(,400)
	ABS-CBN	12.575H	4TV, 2 radio	3/4	13(,845)
	Test mux	12.715H	6+ TV	2/3	30(,000)
	TARBS feeds	4090V/1060V	9TV + radio	3/4	21(,000)
	BBC SSCP	3986/1164H	1TV	1/2	5(,700)

Receivers and Errata

FTA ; Singapore 23hrs, Brunei 1 hr; Brunei V1200 was on 4048V; New Caledonia, parts of Australia FTA SSCP; Australia, New Caledonia, some Eng.

Irdeto 2; 4060V HDTV CA; also try 4020V PowerVu; some FTA (Ch. 1 & 3)

CA & FTA NTSC: Japan, Taiwan

(ApStar 6: also 4180V same #s; analogue also)

also try 3660/3540VVt, Sr 30.000, 3/4; some FTA VPID 512, APID 4112

North beam; also try 3875R, 12.475, 1/2

Strong NZ & Australia; may now be 1/2, 6.525

Aust East beam - 3 FTA + 14 CA

WA only? Skew path, intended Asia

differs from 12.407 C1; **tune ch FTA; NZ+Au**

T11/lower testing late May 2005

NZ + Au, FTA Mcript CA

occ feeds, NZ + Au; recently 12.553V

AMTV, Healing only FTA svcs now here

High performance beam; not NZ; new PIDS 10-05

High performance beam; not NZ; new PIDS 10-05

NZ + Au (Mcript, PowVu capable)

High performance beam; not NZ; new PIDS 10-05

High performance beam; not NZ; new PIDS 10-05

ABC WA tests, FTA

SBS, radio tests WA FTA

Irdeto V2 CA, tests (GWN, WIN)

Now on Australia + NZ beam; SCPs

not currently in use

Tests; SBS-NDS CA, others FTA when here

NZ (90cm) + Australia (**Only C1 svc left on NZ**)

Australia NA only (leakage to Norfolk, New Cal)

Australia NA only (leakage); 9-Net x 3 widescreen

Arrow radio (still here), tone FTA

Pay-per-view movies; CA

Pay-per-view movies; CA

Pay-per-view movies; CA

ABC for Foxtel/Austar; previously 12.288V

changes September 2005

Austar inter; **Expo FTA**

NDS CA + Mcript, CA

CA, subscriptions available Australia, Norfolk

Sky News active; 'Help x 2' **FTA**

CA, subscriptions avail Au, Nrlk; **TVSN FTA**

CA, subscriptions available Australia, Norfolk

"Home"CA, subscription available Australia, Nrlk

CA, subscriptions available Australia, Norfolk

CA, subscription available Australia, Norfolk

CA, subscription available Australia, Norfolk

Central beam; Freq change 08-05

* - plus 12.451H, 12.460H

* - plus 12.293V, 12.402V, 12.411V

Full schedule less commercials - links; may be CA

PIDS vary; also try 12.360, 12.370

occ digital feeds; typ fta

Often NTSC; USA-Australia-NZ

Also 12.437H, 12.456H same params, HDTV+WS

FTA 7 channels (TVNZ x 4); +Maori, DW, CCTV9

Testing late June; 16:9 added late July

NDS CA, subscription available NZ

NDS CA, subscription available NZ

NDS CA, subscription available NZ

also see 12.626, 643, 670, 688, & 706H

NDS CA, subscriptions available NZ

CA

June 2002-Irdeto-2 CA

Dateline west; also east PAS2, 3901V

PowVu CA

Tests - CA service announced

PowVu CA & FTA; subscription available

was PAS-2, previously 3992Vt; **feeds FTA**

NET25 + FTA; new PIDS April '03; reload

PowVu CA; ch 11 DCP-CCP bootload; audio **FTA**

PowVu/CA (some audio **FTA**)

PowVu CA & FTA (EWIN + CBS + TBN +)

NDS CA (6 channels); one test card occ FTA

Mpx FTA V1960, A1920 + radio FTA

Mixed **FTA** & CA; STC gone (CA)

PowVu FTA, replaces PAS-2 svc

Difficult because of CCTV cross pole

PowVu CA

PowerVu; some audio **FTA**

PowerVu; Asian MUX; new parameters Nov '03

8 **MTV China FTA V289, A290**; rest CA

PowVu CA, WIN, ABC NT, SBS; status unknown

Test - may not stay permanently

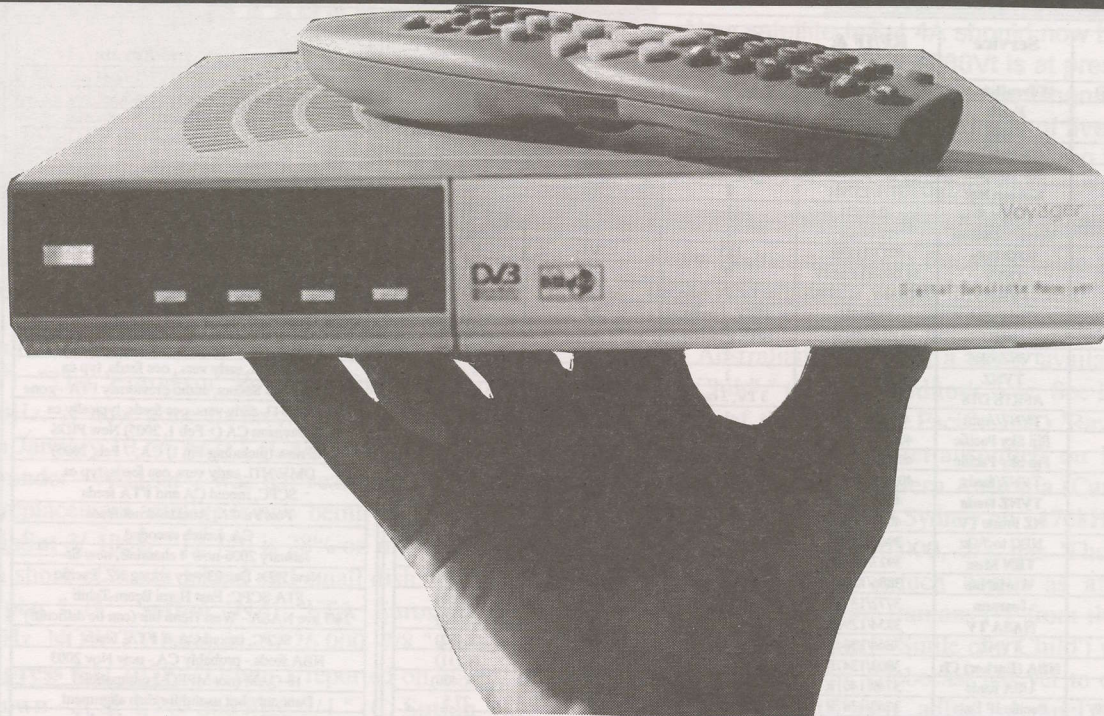
Temp **FTA**; subs Aust 011-800-2270-0722

initially with 6 NTSC colour bars

Occ **FTA** (Chile +); BIG power reduction Nov 03

BBC World moved here January 2005

Pay less - get MORE.



\$120 each (lots of 5) and you receive VOYAGER series Universal CA-Irdeto 2 (1 & 2, Viaccess 1 & 2, Seca 1 & 2, Nagra, Conax), Auto-scan, multi-languages, SCART. **FTA? \$100** each (lots of 5), Auto-scan, multi languages, SCART. All units fully NZ 'C-Tick' approved, TV, radio, edit, teletext, EPG, 6000 ch memory - more! . Dish kits, 65cm > 3m (mesh), LNBs!

www.satlinknz.co.nz - Peter - 0274937025

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Web: <http://www.kristal.com.au>

wavelength

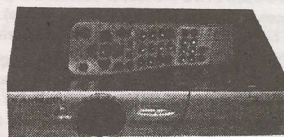
DSR-192



Compact Digital **Satellite** receiver with Scarts, SPDIF Optical out, Modulator, Diseqc1.2 and loop through connection.

wavelength

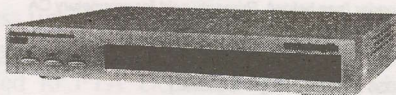
DSR-807



Compact Digital **Satellite** receiver with UCAS slot, Scarts, SPDIF Optical out, Modulator, Diseqc1.2 and loop through connection

wavelength

DSR-103



FTA Compact Digital **Satellite** Receiver With Modulator & SPDIF Coaxial output Diseqc1.2 and loop through connection.

wavelength

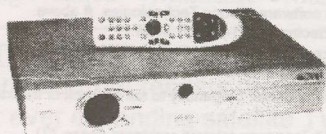
DTR-279



FTA Compact Digital **Terrestrial** Receiver SD Standard Definition Digital Terrestrial Receiver with Philips tuner, modulator, Wide Hot Key, Teletext & Logical Channel

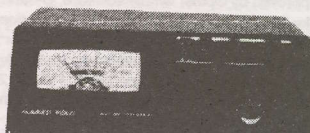
OPENTEL

ODS4000IR



Digital **Satellite** Receiver with one embedded Irdeto Smart card slot With Modulator & SPDIF Coaxial output, Diseqc1.2 and loop through connection.

Marco Polo basic Satellite finder



Satellite finder with inbuilt rechargeable battery, Signal level meter, tone, 13/18V output and 22KHz output.

Wavelength Australia site is at <http://www.wavelength-australia.com>

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS2/169E)	Adventists.tv	4040/1010H	1	2/3	5(,900)
	Feeds	3868/1182H	1	2/3	6(,620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(,620)/7(,498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(,800)
	HK bouquet	3850/1300H	up to 8	2/3	24(,900)
	Korean Bqt	3771/1379H	1	3/4	6(,510)
1804/174E	IPSTAR	12.619H	1	2/3	25(,220)
	Tests-NZ beam	12.646H	1	3/4	22(,418)
	RFO Poly	4027/1123R	1TV	3/4	4(,566)
1701/180E	TNTV	11.060&11.514V	9	3/4	30(,000)
	TVRFO	11.136V, 11.174V	6+TV, 3+ radio	3/4	23(,149)
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(,000)
	PBS	12.648HH	16TV possible	3/4	28(,066)
	TVNZ/BBC	4186/964RHC	1	3/4	5(,632)
	TVNZ	4178/972RHC	1	3/4	5(,632)
	AFRTS DTS	4175/975L	3 TV, 3 radio	2/3	3(,680)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(,632)
	Fiji Sky Pacific	4095/1055LHC	6TV + future radio	3/4	16(,505)
	Fiji Sky Pacific	4055/1095LHC	6TV + future radio	3/4	16(,505)
	TVNZ/feeds	4052/1098RHC	1	3/4	5(,632)
	TVNZ feeds	4044/1106R	1	3/4	5(,632)
	NZ Prime TV	4024/1126L	1	2/3	6(,876)
	NBC to 7 Oz	3960/1190R	1	7/8	6(,447)
	TBN Mux	3927/1223R	4TV	2/3	11(,394)
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(,000)
	Icarana	3772/1378L	1	3/4	4(,566)
	NASA TV	3854/1296R	1 TV	3/4	2(,000)
	TVNZ	3846/1304R	1	3/4	5(,632)
	NBA (Barker) Ch	3803/1347R	1	3/4	6(,111)
	USA feeds	3749/1401R	4?	?	27.5
NSS-5/177W	Pacific IP Data	3763/1387R	none-data	3/4	27.5
	BYU-TV	4185/965R	1TV, 20+ audio	1/2	6(,525)
	IPSTAR Tests	12.691V	8TV	5/6	17(,600)
	Russian TV tests	12.744V	2 TV	3/4	3(,977)

Receivers and Errata

New December 2003; 24/7 "Hope Chs."
FTA (occ sport); also try 3863, Sr6.100
FTA-typ NTSC-occ sport, live Shuttle
PowVu CA + FTA (includes BBC-W 05-05)
was 4148Vt; some FTA
Korean MUX, reload 12-04; new Sr
Tests, late May start; also 12.646H
Testing possible data links; June 2003
SE spot beam; was 4027LHC
east spot; 10TV + r each, vertical pol
FTA 11.136 Tahitian beam, 11.174 west beam; 12/04
1+ FTA, MediaGd "2"; + 10.975 weaker
Testing Fiji region pay-TV (MDS) package (Oct '04)
DMV/NTL early vers. occ feeds, typ ca
DMV/NTL early vers., occ feeds, typ ca
DTS Direct to Sailors; audio previously FTA - gone
DMV/NTL early vers. occ feeds, typically ca
Nagravision CA (> Feb 1, 2005) New PIDS
All now (including Fiji 1) CA; 7 Feb, 2005
DMV/NTL early vers. occ feeds, typ ca
SCPC, mixed CA and FTA feeds
PowVu CA; Auckland net feeds
CA, Leitch encoded
January 2006-now 4 channels, new Sr
New PIDS Dec 03 very strong NZ, Pacific
FTA SCPC; East Hemi Beam-Tahiti
24/7 live NASA - West Hemi bm (can be difficult!)
SCPC, mixed CA & FTA, feeds
NBA feeds - probably CA - new Nov 2003
16-QAM (not MPEG-2 compatible)
Data only but useful for dish alignment
Global beam - requires sizeable dish
CA Tests - Taiwan TV; data coming?? (NZ beam)
Tests - may not last (May 2005); NZ bm; PKVS, REN

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!)

AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept '99. AV-COMM P/L, 61-2-8939-4377.
AV-COMM Tiny Tot. FTA, 12Vdc operated, palm sized, low power consumption; review SF#120. Contact # above.
Coship 3188C. Review SF#107. Blind search FTA rcvr; works well. Phoenix Technology Group (www.phoenixsatellite.com.au) (Irdeto 2 as well as FTA versions)
Divitone: "Left-handed" review SF#115; does "code key" entry. Available <http://www.satmax.ws>
eMTECH eM-100B (FTA), eM-200B (FTA + Ch2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)
Fortec Star Lifetime. Two versions, both blind search, code-key programmable, one X 2 CI. Review SF#119. www.aDigitalLife.com
Humax ICR1 5400 (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available; new software avail 04-04, SF#76.
Humax ICR1 5410 (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available; original importer Sciteq (www.sciteq.com.au).
Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good.
Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.
Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.
INNOVIA IDS3088. Review SF#111. Blind search FTA receiver. High quality Irdeto; available Phoenix Technology Group, and Satmax (<http://www.satmax.ws>).
ID Digital CI-24 Sensor. New August 2003; new lower noise tuner, extra sensitivity; CI Interface slot Irdeto 1 & 2; review SF#109. Sciteq 61-8-9409-6677.
KSF-570 FTA digital receiver, import; KSC-570 adds CI x 2 (no test or user results available). Asoft Limited, 64-4-234-1096
KSC-N550H2 'Premium Dual DVR' digital receiver (no test or user results available). Asoft Limited, 64-4-234-1096
MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777
MediaStar D10. FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.
MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738
Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14.
Nokia 9200/9500. When equipped with proper software, does Aurora, originally did pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. SatWorld 61-3-9773-9270 (www.satworld.com.au)
Pace DGT400/DVR500. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replaced.
Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version (see SF#115, p. 15).
Phoenix 111, 222, 333 models (no longer produced): Service, backup - Phoenix Technology Group 61 3 9553 3399; www.phoenixsatellite.com.au
Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)
PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, CMT etc). For service only - call Scientific Atlanta 61-2-9452-3388. For revision model D9850, see Scientific Atlanta (below).
PowTek. Blind Search Chinese sourced, field tests rate it highly. Source jason@aDigitalLife.com
Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-2749); no longer available.)
SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above); no longer available.
SATWORK ST3618. Blind search FTA receiver. Fast search, problems, especially in "memory-filing" system; review SF#111. Available DMSi at tim@dmsiusa.com.
SATWORK ST3688. Blind search, 3000+ ch memory, multi-format RF modulator; improved version 3618. Review SF#113; available DMSi (above).
Scientific Atlanta D9223, D9234, D9225; Orig. PowerVu, superseded Dec 2003 by D9850. Commercial receiver, available TVO 61-2-9281-4481, John Martin
Strong Technologies SRT2620. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).
Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Technologies 61-3-8795-7990.
Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, does code-key with additional software, Aurora. Strong Technologies 61-3-8795-7990.
Strong 4800 II. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +, code key with additional software. Strong Technologies (above); review SF#103.
Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSeq 1.0, 1.2 (review SF#84), does code key with additional software; Strong Technologies, # above.
UEC Atlas/Titan (1000). New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6361 3636.
UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faulty P/S. Norsat 61-8-9451-8300.
UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel, limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks.
Voyager. Two models (08-05); one FTA auto scan, 6000 ch memory, one multi-CA format CAM. Satlinknz.co.nz
Winersat DigiBox 200. C + Ku basic receiver but includes Teletext for NZ TVOne, 2 VBI. Satlink NZ, fax 64-9-814-9447; long term teletext problems (loses TT).
"X" Digital. When modified with "aftermarket" Internet software, does Aurora and other V-1 CA without card; review SF#119. Strong Technologies (61-3-8795-7990).
Accessories:
Aurora smart cards. MCRYPT (Irdeto V2) cards now available (Jan 2005), Sciteq 61-8-9409-6677.
PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)
PowerVu (Pacific) repair service: Cable & Sat Svcs, Darius West, 61-2-9792-1421 (Email darius@cases.net.au)

WITH THE OBSERVERS

AT PRESS DEADLINE

New satellite InSat 4A should now be functional from 83E. PAS-8, 4080Vt is at presstime FTA including (English) The Movie Channel. Check out <http://wi-fitv.com> for "hundreds of live radio and TV station feeds" - they are looking for more: info@wi-fitv.

Launches: None scheduled next 90 days.

AsiaSat 2/ 100.5E: "ERTU (Egypt) has added Nile News as well as two new radio channels (Bernameg Al-Aam and El-Quran El-Karim) on 3660Vt (Sr 27.500, 3/4)." (Ali, NSW) "The European Bouquet, from day one on As2 4.000Hz, is now gone in favour of new As3 3760Hz (shut down January 10 on As2)." (Gareth, NZ) (Editor's note: Just a reminder - AsiaSat 2 was ten years old in December and a new replacement satellite is now being constructed.)

AsiaSat 3/ 105E: "12.720 is 28% on my Atom STB here on north shore of South Island and small dish; need 50% to lock and play." (C. Sutton, NZ) "FTA Eurosport has started 3760Hz, NOW TV bouquet, Sr 26.000, 7/8." (Ashley)

Express 6A/ 103E: "Orbita 3 reported on 3675V or RHC - unknown - at Sr 4.340 and FEC 3/4." (C. Sutton, NZ)

InSat 2E/ 93.5E: "I have 7 channels loading here on a 4m dish in coastal NSW." (D. Leach)

Intelsat 701/ 180E: "The TBN (Trinity Broadcasting Network) feeds into the Pacific, 3927.95 RHCP, have a new Sr (11.394) with FEC 2/3. They added a fourth TV channel, a children's religious package called 'Smile of a child'. TBN is Ch 1, JCTV (for youth) is Ch 2, TCC is Ch 3 and Smile is on Ch 4." (Bill K. Samoa) (Editor's note: No new, additional, channels are planned in the near term. Rebroadcasting relays in locations such as Samoa are cherry picking programs from all four 'channels' at this point rather than adding new broadcast channels for fulltime/24 hour service in their locales.)

Optus B1/ 160E: "T5/upper, 12.555V, Sr 6.669, 3/4 finished 'I am a celebrity' at end of first week in December. T112/upper (shared with T11/upper UBI MCPC) has a new MUX on 12.455Hz, Sr 12.600, 5/6 loading 6 channels (4 TV and 2 radio), CA using Mcript (same parameters as current Aurora card). This is a copy of the SBS NSW digital feed on Optus B1. More recently, this disappeared for two days, reappeared as 12.450Hz first FTA then CA and then gone as of press time." (IF, Qld.)

Optus B3/ 152E: "Sigaram 2 (12.525V, Sr 30.000, 2/3) reverted to FTA December 21. This channel began as an Indian movie channel, is now a London based Indian channel called 'DEEPAM'. The TBN channels (Trinity, JCTV, and Church TV: 12.657V, Sr 30.000, 2/3) are urging (US) viewers to contact their elected representatives regarding something called 'Multicast Must Carry Legislation

(www.multicasting.com) force US cable firms to carry all of the TBN channels (there are 5 there including one now HDTV). A text crawl on the bottom of the screen advises NZ and Australian viewers of a newly available channel, 'Smile of a Child'. (IF, Qld) (Editor's note: See 1701/180E above for details of the full TBN Pacific list.) 'Raw FM' (A = 1722), broadcast as FTA, is retransmitted on FM transmitters at several locations in Eastern Australia (Canberra, Gold Coast) and is now available in Sydney on 1476kHz AM." (AI, NSW) "On 12.563Hz, Sr 30.000, 2/3 has 'The Healing Channel' (V=2160, A=2120) which began as an Arabic language Christian channel for Iranians (!), from the USS, switched to being a TBN channel ('Smile of a Child') which is US Baptist for young children. Globecast has yet to change the channel label. Globecast's new adhoc channel (previously T5) at V=2260, A=2220 on 9 December has been relabelled 'GC Adhoc' but the video data rate has fallen to 0.75 MBit/s suggesting not in use." (NS, Victoria) "Globecast has made many changes as follows: 'IPTR' which rebroadcasts the Iranian NITV from California, has moved from T5 to T13/12.563H, Sr 30.000, 2/3 (V=1760, A=1720), currently FTA (4 January). 'NTV' (Russian) moved from T7 to T5/12.525Vt, Sr 30.000, 2/3 (V=1960, A=1920), still CA (channel vacated by 'IPTR'). On T7/12.657V, Sr 30.000, 2/3 on channel vacated by 'NTV', there is new channel label ('Vision Asia 5'), possibly new (5th) channel for Indian subscription service. Channel is initially 0.5 MBit/s so is either blank screen or fixed graphic. In mid-December 'Ch 68' returned to 12.613Hz, moved to 12.674Hz and Chs 69-72 were added to four other MCPCs. In fact these are really chs 61-65, the confusion coming from UBI's technician overlooking some SIDs (Service IDs) from the original 12.425Hz MCPC (from the original TARBS settings). Oh yes, I have seen the UBI tech call up the config menus and they still retain the old TARBS logo on each page; a Boulos legacy. The five new channels do not appear to be in use. To add to UBI problems, their reception LNBs overheating in the hot summer sun causing some channels to pixelate, others to drop completely out (an overheated LNB not being much good for its original purpose). On December 7th, UBI began airing the Cyprus 'Sigma Channel with a very low video data rate (1 to 1.4 MBit/s) with the video quality to match; or worse. On the 12th of December, this channel went off. On the 13th the following Greek Cyprus went CA: 'MAD TV'.

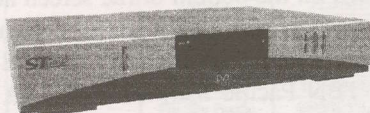
WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. **Photos of yourself, your equipment** or off-air photos taken from your TV screen **are welcomed**. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady.

Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for February 15th issue: February 4th by mail or 5PM NZST February 5th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

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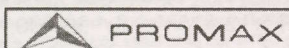
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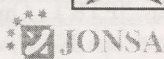
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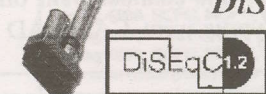
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'STAR', 'MEGA', 'SIGMA', and 'ALTG' leaving 'ALPHA' and 'Cyprus Sat' FTA. On 15 December a text-crawl on Alpha advertised a discount of \$49.95 to potential Greek subscribers. On the 21st, 'ALPHA' went CA leaving 'SIGMA' as FTA. On 23 December, 8 of the previously unused radio channels on 12.613Hz had their labels changed: only 'ALFM', apparently Greek, was hot; the rest no modulation." (IF, Qld.)

Optus C1/ 156E: "Optus has added 9 channels in support of the Melbourne Commonwealth Games, T13/12.398H, Sr 27.800, 3/4, as follows: Initially all but one have the same PIDs (V=1111, A=1112) 'FS Com Games' loads the same as Fox Footy Channel (V=1081, A=1083), plus 'FS Com Games' (2 through 7 plus i and gold). There are also data PIDs not in use. Later in December, this EPG was added:

'Commonwealth Games booking confirmation:
FOX SPORTS Commonwealth Games
coverage starts at 10:30PM on Wednesday
March 15th'." (IF, Qld.)

"Network 7 'AUSTEXT' carried by GWN has had a major facelift, more regularly updated information including 5-day weather forecasts and recent readings." (Garvin)

PAS 8/ 166E: "A chap near Dunedin is reporting 12.286H at 99% lock and 12.726H, well out of what we would expect to be the footprint of this satellite." (C. Sutton, NZ) (Editor's note: The south of South Island lays west of virtually all of the balance of New Zealand, making it closer to the NSW coast and therefore closer to the Australian footprint. Any others in NZ find the PAS-8 transponders functional?)

Thaicom 3/ 78.5E: "Russia Today channel, largely in English, now on 3.640Hz, Sr. 28,066, 3.4 VPID 4866 and APID 4867." (B. Richards, SA)

Is this a MAJOR Foxtel Oops?

"If you receive FOXTEL BOX OFFICE but are unable to order through your FOXTEL DIGITAL REMOTE, press BOX OFFICE to check what's now showing then call 1300-783-833 to order.

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- Phone ordering is not available on FOXTEL IQ.
- Adult Only Select and Main Event can also be ordered over the phone."

This from Foxtel's 'HELP' channel loop.

Additionally, the same 'HELP' channel advises subscribers to "always leave your phone line connected" or 'power point connector always connected' suggesting some installers are resorting to power-point adaptors rather than running phone line (extensions).

Soapbox: "Kenny Schaffer's TV2Me sounds like a really spectrum useful method of video conferencing. Has it been tried?" (Ronald T.) (Editor's note: Yes and no. Most conferencing users do not require high definition video and their origination/camera systems reflect this low def approach. [US] TV stations are now using TV2Me to feed rural area 'news stringer' feeds to the station for use in newscasts and as we saw in November during a visit to Schaffer in New York, the quality of these feeds is at a minimum VHS-S definition. A much better, more economical, system for video conferencing not requiring broadcast quality video is the new Global Touch Solutions Australia 'TelePhoSee' [a really dumb name!] we introduce here starting on page 19.) "TV set with PC built in (as opposed to PC with TV set built in) at

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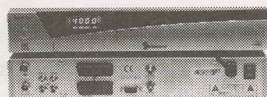
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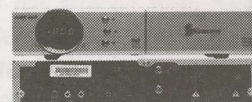
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FTA RECEIVER



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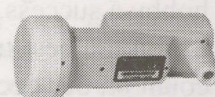


X BOX/4650/4652

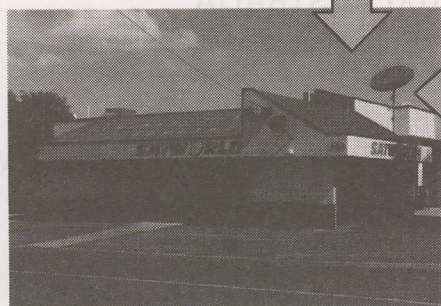


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digitalcityonline.com.au". (Arnie) "EU/Europe plans legislation to allow complete tracking/tracing of any phone calls or Internet connections (including Emails), claiming this move is required to prevent future attacks on population centres (such as London Underground). Ireland, Italy oppose claiming this violates their national laws already in existence." (O'Rourke, Dublin) "Austar has been offering \$10 new-installation fee, now modified to \$10 + \$10 for first month." (Grady) "Fiji has taken over the Pacific region's broadcast and printed world's media organisation, PINA. Tonga and Samoa journalists are especially angry according to press reports. Under the recent PINA election, Fiji media personnel hold key seats on the PINA board including the Presidency. In the recent past, PINA's board has been spread from PNG to Tonga and because of travel and communication difficulties, it has been not especially effective in representing media in the region. With the new officers and Board more centrally located, and controlled from Fiji, the new Board argues it will become a more efficient operation. Amongst the issues - Fiji TV's move to begin selling consumer DTH systems in Tonga, against the telephone company's 5 channel UHF based MPEG-2 (Tonfon Television) over the air subscription service (SF#121)." (Bryan L. Nandi) "Early users (in the USA) are noticing that when a radio station uses digital transmission techniques the delay from their analogue transmitted signal can be as long as 7 seconds. When they say it is '8 o'clock' on digital, in fact it may be 8:00:07!" (Guy S, New York) (Editor's note: Of course most of us are accustomed to the nearly 3 second delay when a transmission comes in via satellite. What is happening here is in addition to the 'satellite delay' we are adding the time it takes for the original program material

(whether radio or TV) to wind its' way through the processing equipment and compression system. You may never be able to set your clock *again* using the radio or TV program start time!) "Can anyone advise the new frequency band which Telstra will be using for their future mobile phone network (promising 3G and broadband Internet wireless)? If this is like UNwired's near-satellite TV band group of transmitters (3.4-3.6 GHz), our C-band troubles are just beginning!" (IF, Qld.) (Editor's comment: UNwired in Fiji has been raising holy heck with Sky Pacific's TV reception in C-band and there is at least some evidence that their transmitters may not in fact be operating with the same power parameters as they were licensed for. UNwired is not behind us - it is just beginning!) "So you say you want an American Green Card? Consider this. A new (model GK-1) 'Lie Detector' tested and perfected in Russia is planned for implementation at US entrance and secure location check points. Anyone entering the states will be required to submit to the test to sort out those who have something to hide (anything to hide!) from those who do not. In one Russian test, 500 passengers were run through the machine and simultaneously all of their luggage (unbeknownst to them) was painstakingly searched. One person, who failed the lie detector test, was the only one found carrying something in their luggage which they had not declared. The tests require 30 to 75 seconds, unless of course you fail. Then it takes longer - much longer. OK, so you don't lie? Then consider this. The US Federal Highway Administration wants to track vehicles - all vehicles - wherever they go, using GPS. Under the proposal, every vehicle inside the USA would be GPS equipped (certainly a boom period for GPS makers) and every vehicle would be tracked full-time by a federal agency still to be created. The

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FIRST: Read page 1 here, then go to <http://www.SatelliteExpo2006.com>. Study the material

SECOND: If you are interested in attending, complete the TOP portion of this page (who you are, where you are) and return to SatFACTS at Fax ++64 9 406 1083, Email skyking@clear.net.nz

THIRD: Our function is to co-ordinate those going to Atlanta as a group, suggest lowest cost airfare options, and if you wish arrange for us as a group to stay in one hotel/motel facility. Further, we will arrange ground transportation to and from the lodging facility to the show daily.

FOURTH: We are NOT involving ourselves in payments, credit cards - each attendee will be responsible for their own payments. We WILL make advance arrangements for Show Registrations so that we as a group can be processed through the opening day gates.

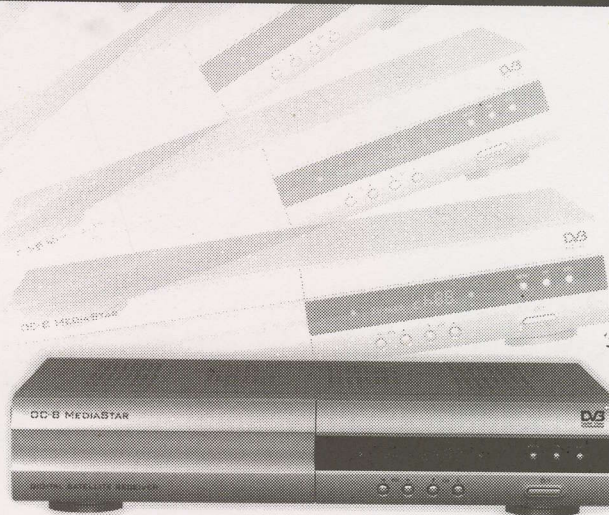
FIFTH: All of our Pacific Expeditionary Force attendees will have distinctive entry badges and we will be hosted by Tim Heinrichs at the DMS International booth - our 'watering hole'!

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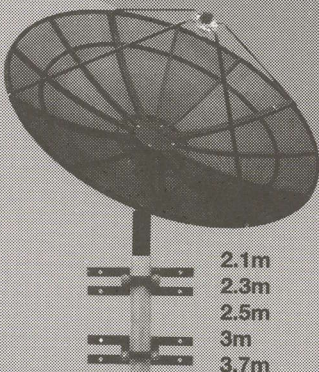
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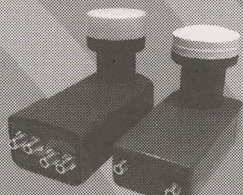
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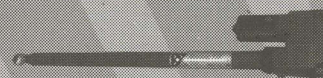


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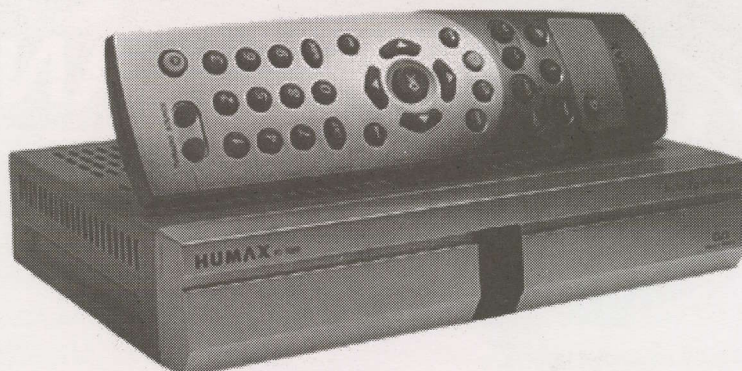
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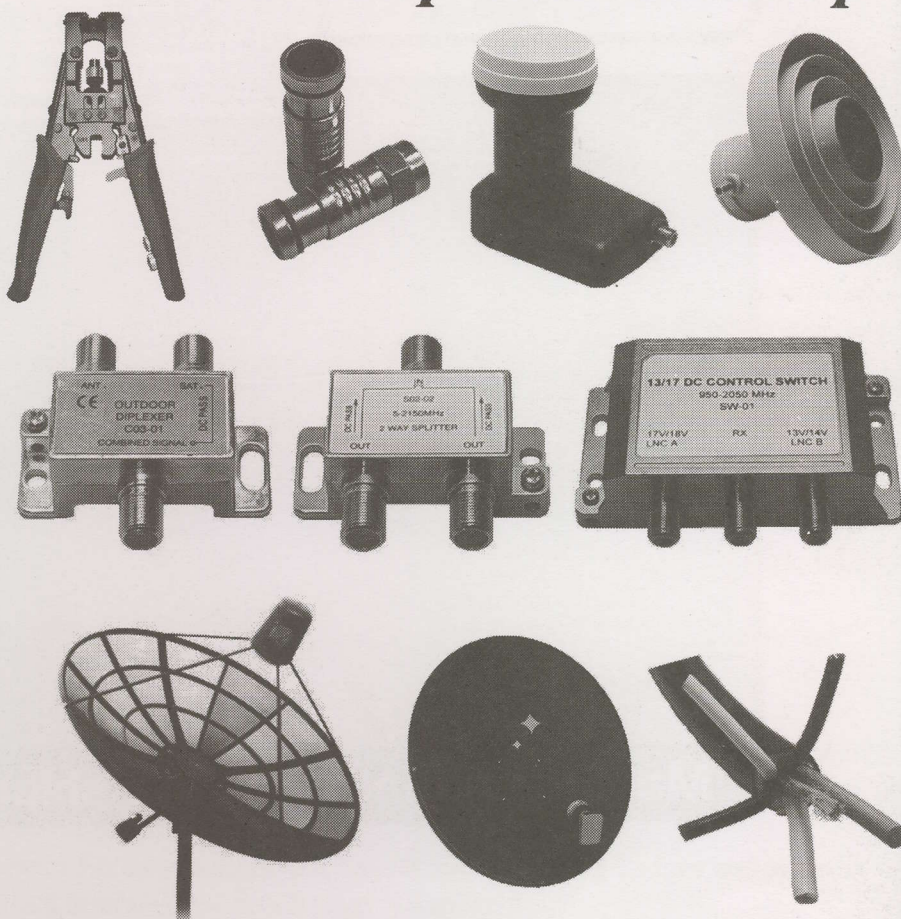
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